# SLV-225EI/225UB/X27

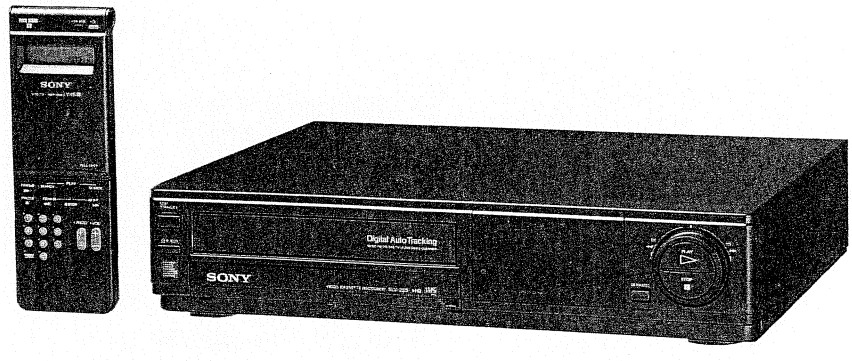
## RMT-V126/V262C

# SERVICE MANUAL

*UK Model*
*SLV-225UB*

*ME Model*
*SLV-X27*

*Irish Model*
*SLV-225EI*



Remote commander RMT-V126 (SLV-225EI/225UB) and RMT-V262C (SLV-X27) is available as a unit, but as individual parts the battery case lid of commander is only available.

Photo: **SLV-225UB**

## SPECIFICATIONS (SLV-225EI/225UB)

| | |
|---|---|
| System | |
| Channel coverage | SLV-225UB<br>UHF channels B21-B68<br>SLV-225EI<br>VHF channels A-J<br>CATV channels S01-S03<br>CATV channels S1-S20<br>UHF channels B21-B68 |
| Inputs and Outputs | |
| Video input | EURO-AV: 21-pin (pin 20) |
| Video output | EURO-AV: 21-pin (pin 19) |
| Audio input | EURO-AV: 21-pin (pins 2 and 6) |
| Audio output | EURO-AV: 21-pin (pins 1 and 3) |
| General | |
| Power requirements | 240 V AC, 50 Hz (SLV-225UB)<br>220 V AC, 50 Hz (SLV-225EI) |
| Power consumption | 30 W |
| Operating temperature | 5 °C to 40 °C (41 °F to 104 °F) |
| Storage temperature | –20 °C to 60 °C (–4 °F to 140 °F) |
| Dimensions | 430 × 95 × 362 mm (w/h/d)<br>($17 \times 3\frac{3}{4} \times 14\frac{3}{8}$ inches)<br>(including projection parts and controls) |
| Weight | 6.0 kg (13 lb 4 oz) |

Accessories supplied
Remote Commander with two R6 batteries (1)
RMT-V126 (SLV-225EI/225UB)
75-ohm coaxial cable (1)
RF channel adjuster (1)
AC power cord (1)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## VHS VIDEO CASSETTE RECORDER

MICROFILM

SONY®

# SPECIFICATIONS (SLV-X27)

## System

| | |
|---|---|
| Format | VHS standard |
| Video recording system | Rotary 2-head helical scanning system |
| Audio recording system | Monaural |
| Video signal | PAL, SECAM and NTSC$_{4.43}$ color systems |
| Tape speed | SP: 23.39 mm/sec. |
| Maximum recording time | SP: 240 minutes with E-240 cassette |
| Fast-forward and rewind time | Approx. 4 min. 15 sec. (E-180) |

## Tuner section

| | |
|---|---|
| Tuner system | 39-position voltage system tuner |
| Channel coverage | VHF: 2 to 12<br>UHF: 21 to 69 |
| Antenna | 75-ohm antenna terminal for VHF/UHF |
| RF converter output | UHF channels 30 to 39 |

## Inputs and outputs

| | |
|---|---|
| Inputs | LINE IN VIDEO (phono jack) (1)<br>input signal: 0.5–2.0 Vp-p, 75 ohms ±5 ohms<br>LINE IN AUDIO (phono jack) (1)<br>input level: –8 dBs<br>input impedance: more than 50 kilohms |
| Out puts | LINE OUT VIDEO (phono jack) (1)<br>output signal: 1.0 ±0.2 Vp-p, 75 ohms ±5 ohms<br>LINE OUT AUDIO (phono jack) (1)<br>output level: –8 dBs<br>output impedance: less than 10 kilohms |

## Timer section

| | |
|---|---|
| Clock | Quartz locked |
| Timer indication | 24-hour indication |
| Timer setting | 6 programs for 1 year max. |
| Power back-up | Back-up duration: approx. 1 hour |
| Tape counter | Linear time counter |

## General

| | |
|---|---|
| Power requirements | 110–240 V AC, 50/60 Hz |
| Power consumption | 25W |
| Dimensions | Approx. 430 x 95 x 352 mm (w/h/d)<br>(17 x 3$^{3}/_{4}$ x 13$^{7}/_{8}$ inches) |
| Weight | Approx. 5.4 kg (11 lb 14 oz.) |

## Remote Commander (RMT-V262C)

| | |
|---|---|
| Remote control system | Infrared control |
| Power requirements | 3V DC, two R6 batteries |
| Dimensions | Approx 51 x 18 x 175 mm (w/h/d)<br>(2$^{1}/_{8}$ x $^{23}/_{32}$ x 7 inches) |
| Weight | Approx. 75 g (3 oz.)<br>(not including batteries) |

## Accessories supplied

Remote Commander with two R6 batteries (1)
75-ohm coaxial cable with DIN type connector (1)
Mains lead (1)
AC plug adaptor (1)

Design and specifications are subject to change without notice.

**Note**

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

# SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

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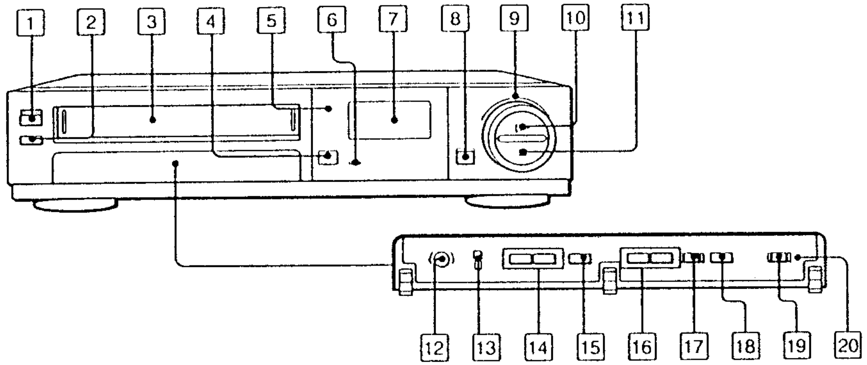
## Identifying the Parts and Controls

Refer pages in circles for details.

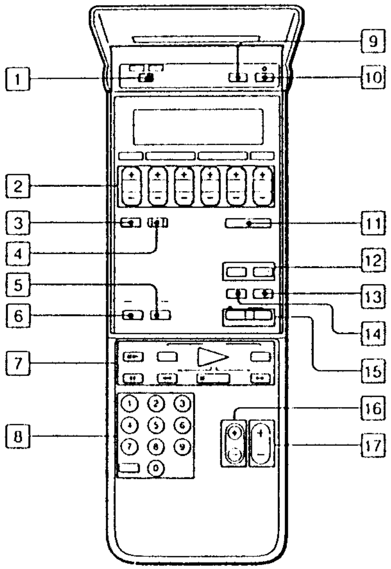
### Front Panel



- [1] ON/STANDBY switch ⑥, ⑳
- [2] ≜ EJECT button ⑰
- [3] Cassette compartment
- [4] Remote sensor ⑥
- [5] AUTO TRACKING indicator ㉘
- [6] NTSC PB ON PAL TV indicator ⑯
- [7] Front panel display ㉗
- [8] ⏸ PAUSE button ⑰, ㉓
- [9] DUAL MODE SHUTTLE ring ㉓
- [10] ► PLAY button ⑯, ㉓
- [11] ■ STOP button ⑰
- [12] SHARPNESS control ⑰
- [13] COLOUR SYSTEM selector ⑦
- [14] TRACKING/FINE TUNING ▼/▲/STILL ADJUST buttons ⑫, ㉓, ㉘
- [15] AUTO TRACKING button ㉘
- [16] PROGRAM (programme) +/– buttons ⑩, ⑯, ⑳
- [17] TUNER PRESET button ⑩
- [18] NEXT button ⑩
- [19] ● REC (record) button ⑱, ㉑
- [20] CL (clear) button ⑭, ⑮

### Remote Control

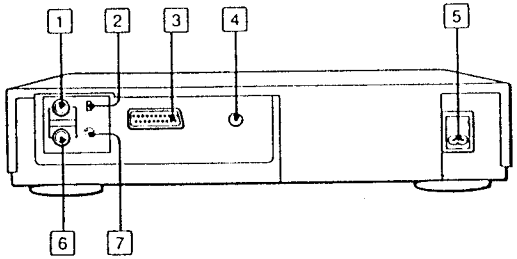
The buttons on the Remote Control with the same name or mark as those on the unit have the same function. The buttons with an orange dot can be used to remotely control Sony TVs when the TV-VTR selector is set to TV. The -/-- (10's digit) button cannot operate on certain Sony TVs.



- [1] TV-VTR selector ⑥
- [2] Timer recording/clock set buttons ⑭, ⑲
  - D (date)
  - START time
  - STOP time
  - PROG (programme position) +/–
- [3] TIMER SET button ⑲
- [4] CLOCK SET button ⑭
- [5] COUNTER MEMORY button ㉖
- [6] COUNTER RESET button ㉖
- [7] Tape transport buttons ⑰, ㉓
  - ⏸► FRAME
  - ⏸ PAUSE
  - ► PLAY
  - ■ STOP
  - ◄◄/►► SEARCH (reverse/forward)
  - ◄◄ REW (rewind)
  - ►► FF (fast-forward)
- [8] Number keys ⑱
- [9] TV/VIDEO button
- [10] ⏻ (on/standby) button
- [11] TRANSMIT button ⑮
- [12] TIMER REC buttons ㉒
  - CLEAR
  - CHECK
- [13] INPUT SELECT button ⑯, ⑳
- [14] INDEX button ㉔
- [15] ● REC (record) buttons ⑱, ㉑
- [16] PROG (programme) +/– buttons ⑩, ⑯, ⑳
- [17] VOL (volume) +/– buttons

This section is extracted from SLV-225EI/225UB instruction manual.

## Rear Panel



- [1] AERIAL IN socket ❻
- [2] TEST SIG. (signal) switch ❽
- [3] EURO-AV (21 pin) socket ❻
- [4] CONTROL S IN jack ㉚
- [5] AC IN (inlet) ❻
- [6] AERIAL OUT socket ❻
- [7] RF CHANNEL selector ❾

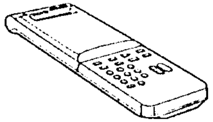
# Getting Started

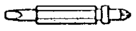
## Unpacking the VCR

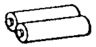
Take the machine out of the box and unpack the accessories. Check that you have the following accessories:

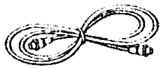
- Mains lead
- Coaxial cable
- Remote control RMT-V126 and batteries
- RF channel adjuster
- Instruction manual

If you do not have all of these items, please contact your dealer.

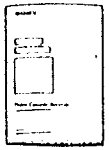

Remote Control


RF channel adjuster


Batteries


Coaxial cable

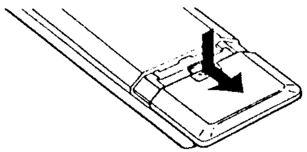
Mains lead


Operating instructions

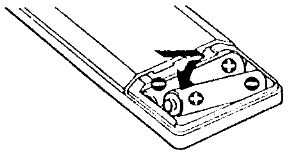
## Preparing the Remote Control

Before using the supplied remote control, insert the correct batteries into the remote control.

1 Open the cover.



2 Insert two R6 (size AA) batteries with the polarities lined up correctly.



3 Close the cover.

### How to Use the Remote Control

When you use the remote control for the operation of the TV or VCR, set TV-VTR (at the top of the remote control) as follows:

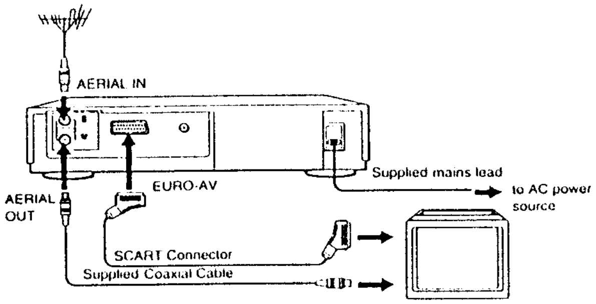
| To operate | Slide TV-VTR to |
|---|---|
| The TV | TV |
| The VCR | VTR |

When you operate the VCR using the remote control, point it to the remote sensor of the VCR. For the location of remote sensor, see "Identifying the Parts and Controls" on page 31.

### Battery Life

With normal operation, batteries will last for about six months. If the remote will not be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

## Connecting the VCR



1 Turn the VCR around so you can see the rear panel.

2 Disconnect the aerial input lead from your TV and connect it to the socket marked "AERIAL IN" on the rear of the VCR.

3 Connect the coaxial cable (supplied with the VCR) to the socket marked "AERIAL OUT" on the VCR and then plug it into the aerial input socket on your TV.

4 Check all connections and ensure they are firm.

5 Take the mains lead and plug it into the socket on the back of the VCR marked "AC IN". Then plug the other end into the mains supply.

### Additional Connections

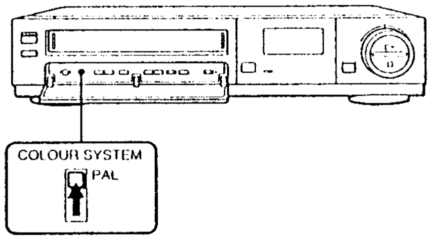
If you wish to enjoy improved picture quality and your TV is suitably equipped, you can use a EURO-AV connector (SCART) to link your VCR and TV. Connect the EURO-AV socket of this VCR and 21-pin SCART connector on your TV, using the VMC-2121CE cable (SCART connector, not supplied). If in doubt, consult your TV instruction manual.

## Setting the Colour System

The VCR receives TV programmes based on the PAL system, records using this system and plays back the tapes recorded on PAL or NTSC system.
To view tapes recorded on the NTSC colour system, use a TV based on the PAL colour system. If you are using a TV equipped with the COLOUR SYSTEM switch, set it to "PAL".

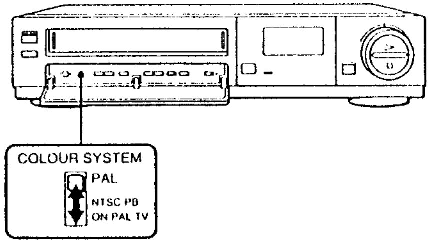
### Before Recording

You need to set COLOUR SYSTEM to PAL.



### Before Playing Back

You need to set COLOUR SYSTEM according to the system to be played bac

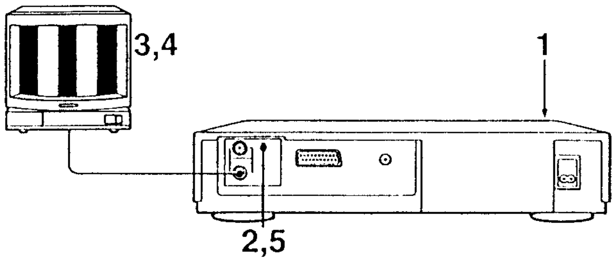


| | |
|---|---|
| PAL: | To play back tapes recorded on a PAL system |
| NTSC PB ON PAL TV: | To play back on a PAL TV tapes recorded on an NTSC system |

**When playing back tapes recorded on an NTSC system**
Depending on the TV used, a black bar may appear at the top and bottom of the picture, or the picture may not appear on the screen.

## Tuning the VCR to Your TV

If you have connected your VCR and TV using only the aerial sockets, you have to adjust one of the television programme positions to receive the VCR's signals.
If the VCR-TV connection is made using the EURO-AV socket, skip this step.



1 Press ON/STANDBY to turn on the VCR.

2 Set TEST SIG. to ON.
The test signal is transmitted on a channel between UHF channels 32 and 42.

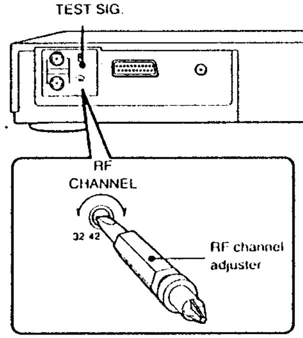
3 Turn on the TV and select a programme position that is not used to receive a TV station.

4 Tune the TV so that a test pattern is clearly displayed on the TV screen.

5 Set TEST SIG. to OFF.

**You have now tuned your TV to your VCR. Whenever you wish to receive the VCR's playback picture on the TV, turn to the TV programme position you have set for the VCR and switch on the VCR.**

### When the test pattern is not free of disturbance



1 Set TEST SIG. to OFF.

2 Adjust a programme position on the TV between UHF channels 32 and 42, where the TV shows no picture and where no sound is heard.

3 Set TEST SIG. to ON.

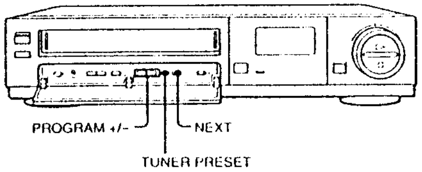
4 Turn RF CHANNEL slowly with the supplied RF channel adjuster until an undistorted test pattern is displayed on the TV screen.

5 Set TEST SIG. to OFF.

## Tuning the VCR to the Required Stations

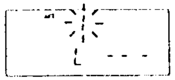
To watch and record a TV programme on the VCR, you have to tune the VCR to the broadcast channels. You can preset up to 39 channels.

### Allocating Desired Channels

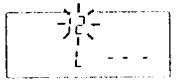


1 Turn on the VCR and the TV.
If you have made the VCR-TV connection using the aerial sockets, select the programme position for video playback. If you have made it using the EURO-AV socket, select the input for the VCR.

2 Press TUNER PRESET.

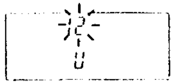


3 Press PROGRAM + or – until the desired programme position number appears in the front panel display.



Then press NEXT.

4 Press PROGRAM + or – until the desired band indicator appears in the display window.



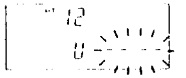
Then press NEXT.

Refer to the following table for the band indicator and the corresponding channels.

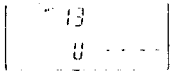
| Band indicator | Corresponding channels | |
|---|---|---|
| | for the SLV-225UB | for the SLV-225EI |
| L | — | VHF A-C<br>S01, 02, 03,<br>S1, S2 |
| H | — | VHF D-J,<br>S3-S20 |
| U | VHF 21-68 | UHF 21-68 |

"S" will appear at the band indicator position.
"S" should be selected to erase unwanted programme positions. See page 13.

5 Press PROGRAM + or –.
The VCR automatically finds a channel being used for a broadcast.
The AFT (Auto Fine Tuning) automatically fine-tunes the picture. To manually fine-tune the picture, see page 12.

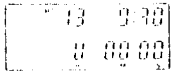


6 Press NEXT.
The VCR sets the selected channel to the selected programme position.



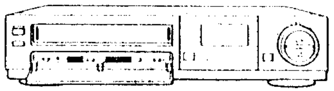
7 Repeat steps 3 to 6 to tune and set other channels to other programme positions.

8 Press TUNER PRESET again.
The display will return to the normal display.



## Fine-Tuning the Picture

The AFT (Auto Fine Tuning) will appear in the front panel display when a station is tuned in, or preset.
If the picture of a particular channel is not acceptable, proceed as follows.



1 Press PROGRAM + or – to select the unsatisfactory station.

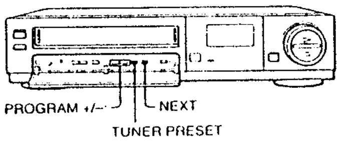
2 Press TUNER PRESET.

3 Press TRACKING/FINE TUNING ▼ or ▲ until the best possible picture and sound are obtained.
The AFT indicator goes off.

4 Press TUNER PRESET.

## Erasing Unwanted Programme Position

After tuning TV channels to the programme positions, you can designate unwanted programme positions so that the programme position will be skipped when you search for a channel with PROGRAM + or –.


PROGRAM +/–
NEXT
TUNER PRESET

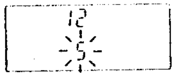
1 Turn on the VCR and TV.

2 Press TUNER PRESET.

3 Press PROGRAM + or – until the programme position number to be skipped appears in the front panel display.

4 Press NEXT.

5 Press PROGRAM + or – until "S" appears and flashes at the band indicator position in the front panel display.



6 Press NEXT.

7 Repeat steps 3 to 6 to designate another programme position to be skipped.

8 Press TUNER PRESET.
The display will return to the normal display.

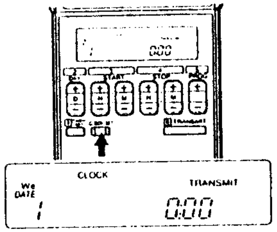
### Cancelling the skip function

Tune a TV channel again to the programme position which has been erased. (See page 10).

## Setting the Date and Clock

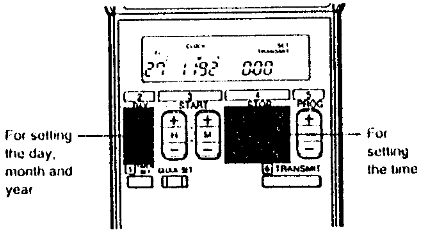
1 Lift the remote control flap.

2 Press the CLOCK SET button and check that the word "CLOCK" appears in the LCD (Liquid Crystal Display) on the remote control.


CLOCK
TRANSMIT
DATE
0:00

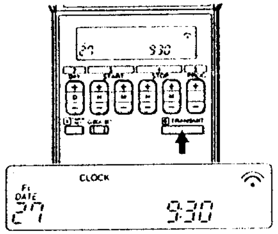
3 Press the button marked "D" (top to go forward and bottom to go backwards) until today's day, date, month and year are indicated. Keep pressing the "D" button going through the dates, months and years until the correct date is set.

If you keep the "D" button pressed, the display will change more rapidly.


For setting the day, month and year
For setting the time
START
STOP
PROG
TRANSMIT
CLOCK SET

4 Press the STOP section H and M rocker buttons under the flashing "0 00" on the remote display. Use these buttons to set the correct time. Once done, the correct day, month, year and time are all shown on the remote display.

5 When you are satisfied that all the information is correct, point the remote at the VCR and press the TRANSMIT button.



The correct time should now appear in the front panel display of the VCR even when the VCR is off.

**You have now finished setting up your VCR.**

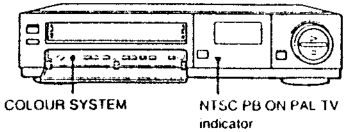
# Basic Operations

## Playing a Video Tape

When you want to play a video tape, just slide it into the tape compartment until the VCR grips it. The power will go on automatically and the VCR will start playing the tape immediately.

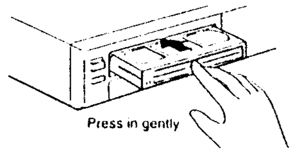
1 Turn on the TV.
If you have made the VCR-TV connection using the aerial sockets, select the programme position for video playback.
If you have made the VCR-TV connection using the EURO-AV socket, select the input for the VCR.

2 Open the drop-down panel and set the COLOUR SYSTEM switch on the VCR to the system to be played back.

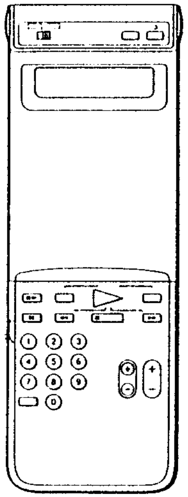


| | |
|---|---|
| **PAL:** | To play back tapes recorded on a PAL system |
| **NTSC PB ON PAL TV:** | To play back on a PAL TV tapes recorded on NTSC system<br>When COLOUR SYSTEM is set to NTSC PB ON PAL TV, the NTSC PB ON PAL TV indicator lights in green. |

3 Insert the video tape.
The VCR goes on automatically. If the safety tab of the cassette is removed, playback also starts automatically.



4 Press ► PLAY.
When the tape reaches the end, the VCR automatically rewinds the tape to the beginning (auto rewind). The power of the unit remains on.



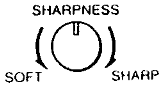
- When you play back a tape recorded on the NTSC colour system, the picture may go black and white, shake, or shrink a bit. It depends on the TV you have.
- When the PAL and NTSC colour systems are mixed on a tape, the counter does not show the exact count, since each system has a different counting cycle.

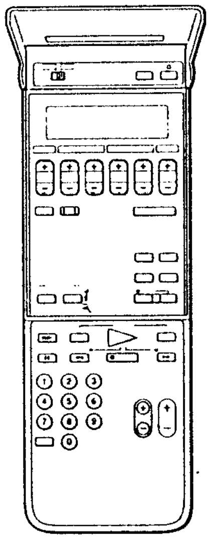
- When the pause mode lasts for more than approximately 5 minutes, the VCR will automatically enter the playback mode.

| To | Press |
|---|---|
| Stop the tape | ■ STOP |
| Interrupt play | II PAUSE (Press II PAUSE again to resume play.) |
| Eject the tape | ▲ EJECT on the VCR. |

### To adjust the sharpness of the picture

Turn SHARPNESS to SHARP for a sharper focus or to SOFT for a softer focus.





**Watching a TV programme while recording another**
Select the programme position of the TV programme you desire on the TV.

You can record TV programmes in one of three ways:
- While you are watching the programme
- While you are watching another programme
- While you are not watching the TV at all (Timer Setting)

## Recording While Watching the TV Programme

While recording a TV programme, you may want to record the whole programme or you may want to delete certain scenes.

1 Turn on the VCR and TV.
If you have made the VCR-TV connection using the aerial sockets, select the programme position for video playback.
If you have made the VCR-TV connection using the EURO-AV socket, select the input for the VCR.

2 Insert a video tape. (Its safety tab must be in place.)
The VCR automatically turns on. The o-o indicator appears.

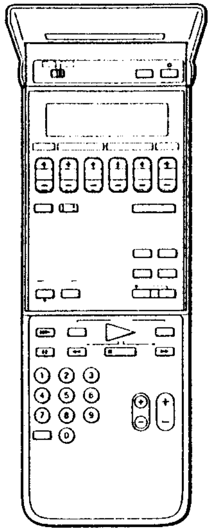
3 If the AU indicator lights in the front panel display, press INPUT SELECT.

4 Press the plus (+) or minus (–) side of the gray PROG +/– button or the number keys to select the programme position number you want to record.
To select a programme position number over 9 with number keys, press the -/-- button, then the appropriate number keys.

5 Press ● REC while pressing the button to the right of it.
Recording starts. The tape will automatically rewind when it reaches the end.

| To | Press |
|---|---|
| Delete a scene you don't want recorded | II PAUSE while the unwanted scene is being broadcast.<br>Press II PAUSE again to resume recording. |
| Stop recording | ■ STOP |
| Have the VCR stop after recording | ● REC while recording;<br>press until the amount of time you want to record is displayed (while "OFF" flashes.) |

# Recording TV Programmes Using the Timer

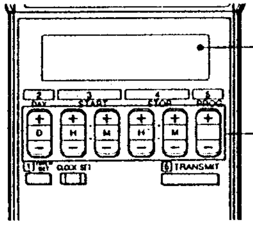


**If a cassette without safety tab is inserted**
The ⏲ indicator will flash and the cassette will be ejected.

**When setting the day, if you press the — side of the D button twice**
The day in the next month appears. You can go back to the day by pressing the – side of the D button.

**If ER appears in the front panel display when you press TRANSMIT**
The timer settings have not registered in the VCR.

You can use the timer on the VCR to automatically record TV programmes while you are out. You can set the VCR to record up to six TV programmes within a month.



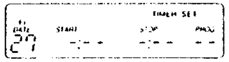
LCD Read-Out Display

Timer Setting Buttons
Use the remote control to set the timer. You don't have to be near the VCR to set the timer. Once you've made your settings on the remote control, aim at the VCR and press TRANSMIT to register the settings with the VCR deck.

1 Before turning on the VCR, check that the clocks on the remote control and front panel show the correct time (if not, see "Setting the Date and Clock" on page 14).

2 Make sure the safety tab on the video tape is in place and insert the tape.

3 Press TIMER SET.
"TIMER SET" appears in the LCD read-out display at the top of the remote control.



4 Choose one of the following options:

## To Record on a Single Date

1 Press D (day) until the day you want to start recording appears in the LCD read-out.

2 Continue at step 5 below.

## To record Every Day at the Same Time

1 Press D (day) until today's date appears in the LCD read-out.

2 Continue to press the – side of the D button to select "EVERY Su Mo Tu We Th Fr Sa".

3 Continue at step 5 below.

**If you do not set the turn-off time**
The VCR records to the end of the tape.

**If "FULL" appears in the front panel display when you press TRANSMIT**
You have set six TV programmes

**If no tape has been inserted**
When presetting operation finishes, the ⏲ (timer stand-by) indicator flashes.

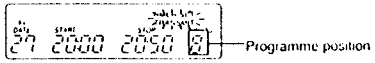
**When the tape has reached end**
Recording stops, but the tape will not be rewound to the beginning.

**To release the timer standby mode, press ON/STANDBY.**

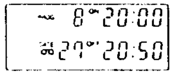
**To stop timer recording, press ■ STOP.**

5 Press H (hour) and M (minute) in the START section to set when recording is to begin, and H and M in the STOP section to set when recording is to end.

6 Press PROG + or – to select the TV programme position to be recorded. "TRANSMIT" flashes in the LCD read-out.



7 Point the remote control at the remote sensor on the VCR and press TRANSMIT.
After the on and off times are displayed for a few seconds, the VCR activates recording standby (the ⏲ indicator lights).

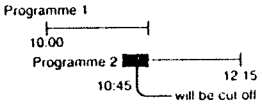


Front panel display

8 Press TIMER SET.
The current time appears in the LCD display.
The VCR stands by to go on automatically at the setting time.

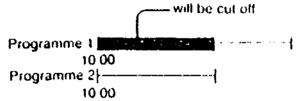
## If the setting of two programmes overlaps

The recording of programme 2 will not begin until the recording of programme 1 is completed.



## If the turn-on time of two programmes is the same

After the recording of the programme set second ends, the programme set first will be recorded.

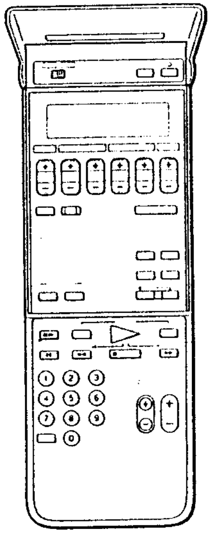


## To Preset Other Programmes

After you turn on the power, repeat steps 3 to 8.
Up to six programmes can be preset.

## To Record from Equipment Connected to EURO-AV Socket

Press INPUT SELECT in step 6 to display "AU".



## Using Quick Start Recording

Quick Start Recording lets you set the VCR for recording faster than the regular timer because you set the time in 30-minute units. However, unlike timer recording, quick start recording doesn't begin automatically — you must be there to start the timer. Once you've started it, you can leave the VCR to record for the time you've set.

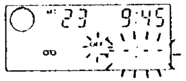
1 Make sure the safety tab on the video tape is in place and insert the tape.

2 If the AU indicator lights in the display window, press INPUT SELECT.

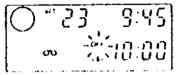
3 Press PROG +/– to select the channel to be recorded.

4 Press ● REC while pressing the button to the right of it.

5 Press ● REC again.
The OFF indicator flashes in the front panel display.



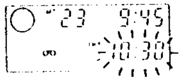
6 Press ● REC while the OFF indicator is flashing (for about 10 seconds).
The QSR indicator appears.



Each time ● REC is pressed, the recording time increases by 30 minutes.

**Example:** To set the recording end time at 10:30 when starting the quick start recording at 9:45.
Press ● REC twice.

9:45
↓
10:00 → 10:30



If the recording starts between 9:31 and 9:59, the first press of the REC button will set recording until 10:00.

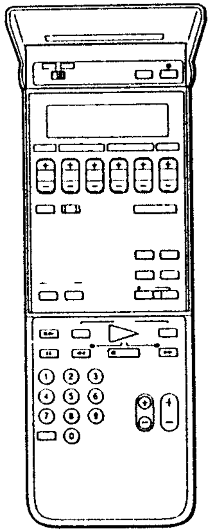
7 You can now leave the VCR. The recording stops when the preset recording time has elapsed.

**If you do not press ● REC while the OFF indicator is flashing**
The OFF indicator goes off, and recording continues to the end of the tape unless you stop the recording.

**When the tape reaches the end**
Recording stops, but the tape will not be rewound to the beginning.

**To stop the recording**
Press ■ STOP

**Checking/Changing**
When ● REC and the button to the right are pressed during QSR, recording end time will flash for 10 seconds. The recording end time can be changed by pressing ● REC during this 10-second period.



## Checking or Changing Timer Settings

You can check, cancel or change TV programmes to be recorded.

### Checking the Timer Settings

1 Turn on the VCR.

2 Press TIMER REC CHECK.
Each time TIMER REC CHECK is pressed, the preset timer settings will be displayed successively.
To check the month and year, press PROG + twice.
When TIMER REC CHECK is pressed at the last preset programme, the check mode will be released and the VCR enters the timer recording standby mode.

### Cancelling the Timer Setting

1 Turn on the VCR.

2 Press TIMER REC CHECK until the programme to be cancelled appears in the front panel display.

3 Press TIMER REC CLEAR.
To cancel other programmes, repeat steps 2 and 3.

4 Turn off the VCR to return to the timer recording standby mode if there are other programmes set for timer recording.

### Changing Timer Setting

1 Turn on the VCR.

2 Press TIMER REC CHECK until the programme to be changed appears in the front panel display.

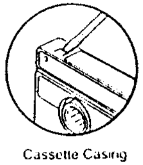
3 Press PROG +/– until the item to be changed flashes.

4 Press the number buttons to correct the item.
Always press the 0 button first when entering a single number setting.

5 Press TIMER REC CHECK.
The VCR enters the timer recording standby mode.

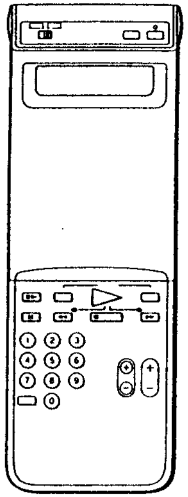
## Saving a Recording

To keep from erasing your recorded tape, break off the safety tab on the cassette.
If you later want to use the same video cassette to record, cover the slot with adhesive tape.



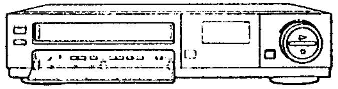
Cassette Casing

# Advanced Operations



Streaks or noise cannot be eliminated completely in the various playback operations.

## Various Playback Operations



### Playback pause

Press II PAUSE during playback.
To resume normal playback, press II PAUSE again or press ▶ PLAY on the remote control or the upper half of the DUAL MODE SHUTTLE. When the pause mode lasts for more than approximately 5 minutes, the VCR will automatically enter the playback mode.

**If the picture is shaking while in the still mode**
Adjust the picture with STILL ADJUST ▼/▲.

### Picture search

**On the VCR**
During playback, fast-forward or rewind, turn the DUAL MODE SHUTTLE ring clockwise to ▶▶ (forward direction) or turn it counterclockwise to ◀◀ (reverse direction). A high-speed picture without sound appears on the TV screen. To return to the previous mode, release the ring.

**On the remote control**
During playback, fast-forward or rewind, press and hold ▶▶ FF or ◀◀ REW.
To return to the previous mode, release the button.

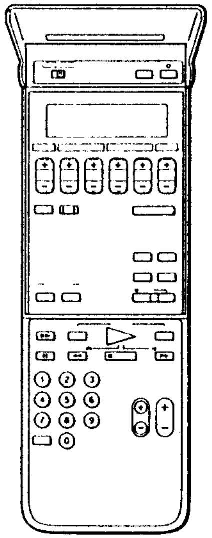
### Locked picture search

During playback, press ⊖ SEARCH (reverse direction) or ⊕ SEARCH (forward direction). A high-speed picture appears on the screen even when you release the button. To resume normal playback, press ▶ PLAY on the remote control or the upper half of the DUAL MODE SHUTTLE.

### Frame-by-frame advance

Press II PAUSE, then press II▶ FRAME as many times as desired.
To resume normal playback, press ▶ PLAY or II PAUSE.

**The index signal is marked only when you start recording from the stop mode**
If the VCR is set to the recording pause mode and then recording is resumed, no index signal will be marked.



## Using the Index Function

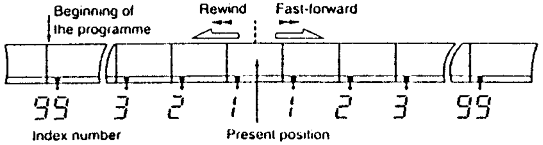
A desired programme can be easily located by an index signal marked on the tape.

### How Index Signals are Marked

An index signal is automatically marked on the tape when recording starts from the stop mode.

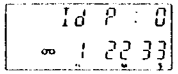
### Locating a Desired Programme — Index Search

You can locate a desired programme and play it back automatically by designating its index position.
Up to the 99th index signal from the present position on the tape can be located.

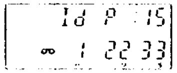


1 Insert the video tape.

2 Press INDEX while in the stop or playback mode.
The index indicator "Id" appears.



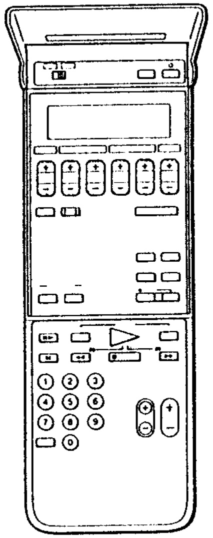
3 Press the number keys to designate the index position you want to locate.
The index number will be displayed in the front panel display.



4 To locate a previous index position on the tape, press ◄◄ REW.
To locate a position ahead, press ►► FF.
The tape will be rewound or advanced rapidly. Every time an index signal is detected, the index number will decrease, until it reaches P: 1 and playback begins automatically from the desired position.

### To release the index search mode after setting the number

Press INDEX again.

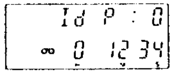


## Watching the Beginning of Each Recording — Index Scan

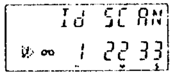
You can sample the beginning of each recording consecutively by using the index feature.

1 Insert the video tape.

2 Press INDEX while in the stop or playback mode.
The index indicator appears.



3 Press ►► FF or ◄◄ REW.



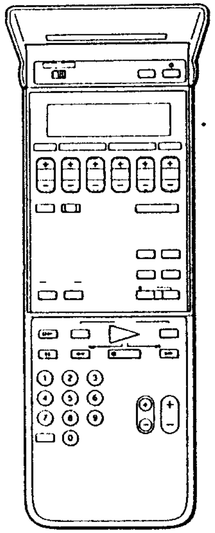
The tape will be rewound or advanced rapidly, and the VCR will search for an index signal. While the VCR is searching for the first index signal, "Id SCAN" is displayed in the front panel display.
Each time an index signal is detected, the VCR will play back 5 seconds of tape. Then the VCR resumes searching for the next index signal.

### To view the normal playback picture

Press ► PLAY during the 5-second index playback period.

### To stop index scan.

Press ■ STOP.



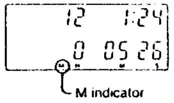
## Using the Tape Counter

The VCR can memorize the counter zero point (0H00M00S) and automatically stop at that point. Thus, you can search for a desired point quickly during playback or recording.
Note that the tape counter only counts those sections of the tape where something has been recorded.

1 During playback or recording, press COUNTER RESET at the point you want to locate later. The counter will indicate "0H00M00S".

2 When recording or playback is finished, press ■ STOP.

3 Press COUNTER MEMORY so that the M indicator appears in the front panel display.

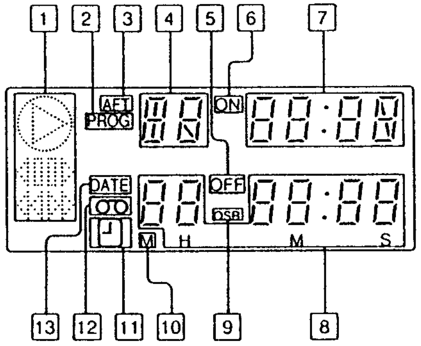


4 Press ◄◄ REW to rewind the tape.
The tape stops automatically at the position right before the "0H00M00S" point.
If you press ◄◄ REW again, the VCR shows a negative counter value. To locate the counter zero point, press ►► FF.

### To cancel the memory

Press COUNTER MEMORY.

## Reading the Front Panel Display



| Indicator | Lights when |
|---|---|
| 1 Tape transport indicators | VCR is rewinding, fast-forwarding, playing, pausing, etc. |
| 2 PROG indicator | Setting the timer for the timer-activated recording. |
| 3 AFT indicator | Automatic fine-tuning function. |
| 4 Programme number | Setting the timer for the timer-activated recording. |
| AU | Recording signals from a EURO-AV socket. |
| T | Automatic tracking adjustment. |
| Id | Index operation. |
| ER | You press TRANSMIT, the timer setting have not registered in the VCR. |
| 5 OFF indicator | Setting the timer-stop time. |
| 6 ON indicator | Setting the timer-start time. |
| 7 Current time/tracking position indicator | Current time, timer-activated recording start time and tracking position. |
| FULL | You have set six TV programmes for timer recording. |
| SCAN | Index scan operation. |
| 8 Linear tape counter/ timer-activated recording end time | How long a tape has been playing or recording and timer-activated recording date and end time. |
| 9 QSR indicator | VCR is performing quick start recording. |
| 10 M indicator | VCR memorize the counter zero point. |
| 11 ⏲ indicator | VCR is waiting for the turn-on timer of timer recording. |
| 12 σσ indicator | The tape is inserted. |
| 13 DATE indicator | Date. |

**The auto tracking function works automatically (for about four seconds)**
When the tape is played back just after it is inserted.

**When a prerecorded tape with the copyguard system is played back**
Intermittent distortion may appear in the upper portion of the picture. However, this is not a malfunction of the unit.

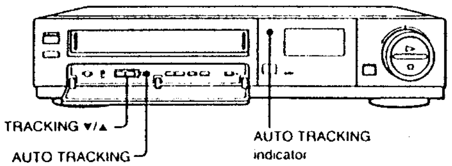
**When playing back tapes recorded on another VCR or poorly recorded tapes**
Satisfactory picture quality may not be obtained.

## Removing Picture Distortion

Usually, the tracking control function removes picture distortion automatically. However, occasionally, streaks or "snow" may appear on the screen when you play a video tape. When this happens, you can adjust the tracking control yourself either automatically or manually.

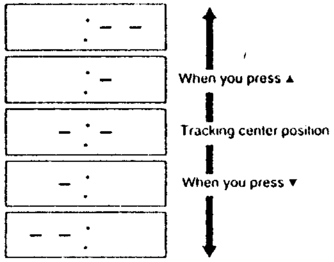
### Automatic Tracking Adjustment

Press AUTO TRACKING during playback.
The AUTO TRACKING indicator lights and the "--:--" indicator appears in the front panel display.



### Manual Tracking Adjustment

If picture does not improve even when AUTO TRACKING is pressed, adjust the tracking manually by pressing TRACKING ▼/▲.



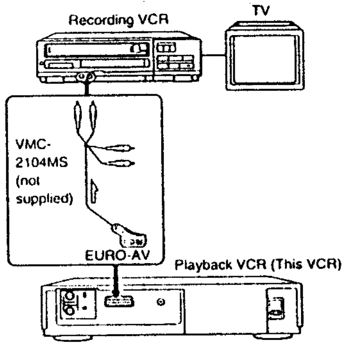
About three seconds after the button is pressed, the clock display will reappear.

## Editing Video Tapes with Another VCR

**This is just a sample connection.**
If your VCR has different sockets than the ones referred to in this connecting procedure, consult your local Sony dealer or local Sony service facility for how to make the best connection.

To record video tapes from one VCR to another, connect the VCRs using a 4-plug, EURO-AV type connector (Sony VMC-2104 MS; not supplied). The SLV-225 (this VCR) will function as the playback VCR and the other VCR as the recording VCR.

### Connecting the Two VCRs



1 Connect the other (recording VCR) to the TV. (Refer to the manual of the other VCR for how to connect it.)

2 Into this VCR, insert the EURO-AV connector at the terminal marked "EURO-AV".
Take the other end of this connector and insert the yellow (video) plug into the terminal on the other VCR marked "Video In"; then, take either a red or white (audio) plug and insert it into the terminal marked "Audio In". (If it's a stereo model, plug in both red and white plugs at the two sockets marked "Audio In".)

If a EURO-AV socket is already attached to your TV, disconnect it from the TV.

3 On the other machine, select the line input (line 1 or 2) depending on the connection you have just made.

### Editing

**NTSC-recorded Tape**
You cannot edit the NTSC-recorded tape onto another VCR.

1 Into this VCR (playback VCR), insert a video tape with recording on it; into the other machine (recording VCR), insert a blank tape, or one that is to be copied onto.

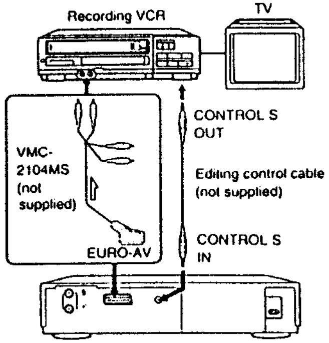
2 On the other machine (recording VCR) find the point on the tape you want to start recording and press II PAUSE; on this machine, find the point on the tape you want to start playing and press II PAUSE.

3 On this machine, press ► PLAY; on the other, press ● REC.

4 Release both II PAUSE buttons at the same time.
Copying begins.

## Using the CONTROL S IN Jack

If this VCR is connected to other Sony equipment via a CONTROL S output jack, this VCR can be remotely controlled by other Sony equipment. Editing will be more precise if you edit from another Sony VCR equipped with a CONTROL S output jack and SYNCHRO EDIT button.


Recording VCR
TV
CONTROL S OUT
Editing control cable (not supplied)
CONTROL S IN
VMC-2104MS (not supplied)
EURO-AV

1 Insert a cassette with safety tab into the other VCR and select the line input.

2 Insert a source cassette into this VCR and set it to playback pause mode.

3 Set the other VCR to recording pause mode.

4 Press the SYNCHRO EDIT button on the other VCR.
Recording and playback start at the same time.

5 To stop editing, press the SYNCHRO EDIT button again.

# SECTION 2
# DISASSEMBLY

## 2-1. REMOVAL OF UPPER CASE

It is widen on both sides the back of upper case and remove up direction.

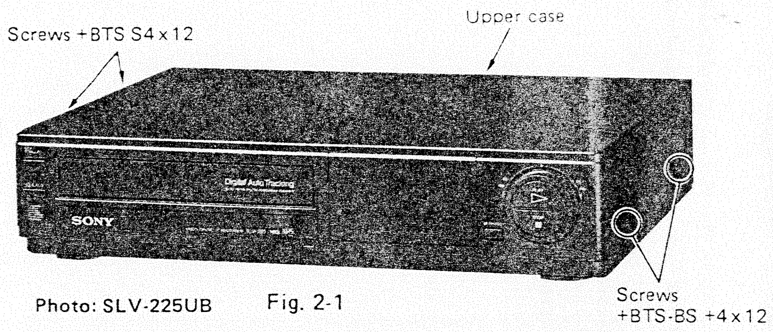

Screws +BTS S4 x 12
Upper case
Screws
+BTS-BS +4 x 12

**Photo: SLV-225UB** Fig. 2-1

Then remove the upper case.

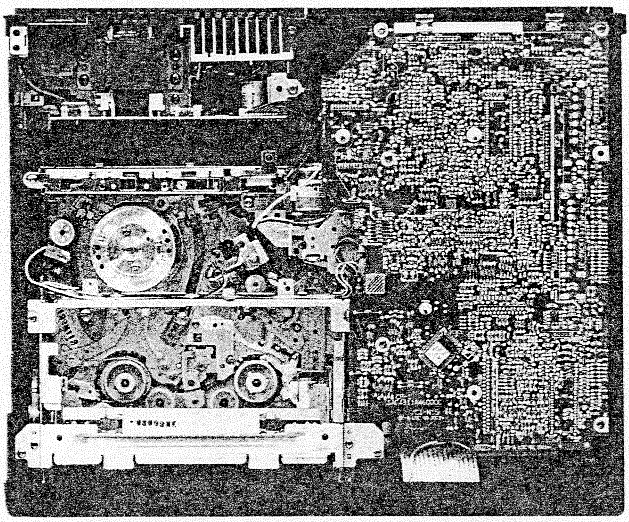


Fig. 2-2

## 2-2. REMOVAL OF BOTTOM PLATE

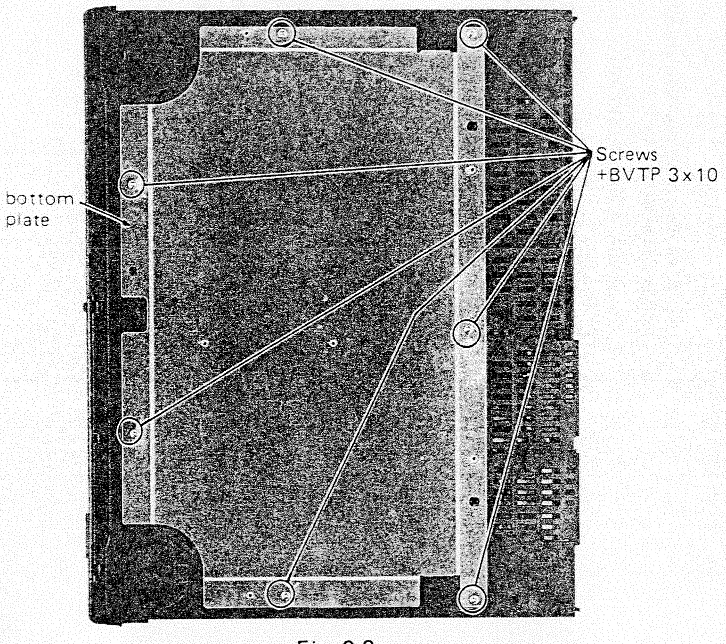

bottom
plate
Screws
+BVTP 3x10

Fig. 2-3

Then remove the bottom plate.

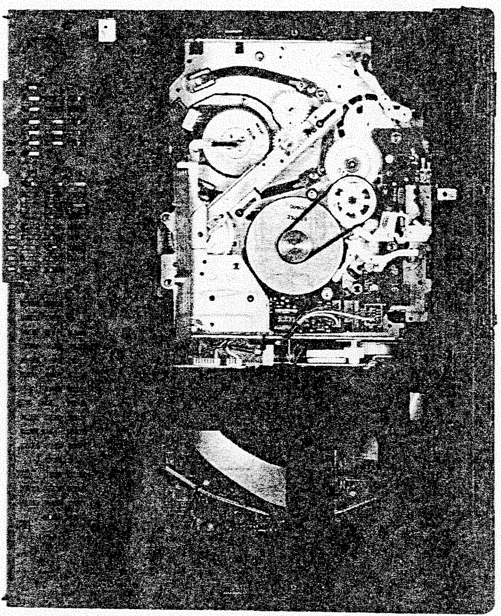


Fig. 2-4

## 2-3. REMOVAL OF FRONT CABINET

The remove the upper case, and bottom plate and raise up the claws front cabinet (three places) as shown by Fig. 2-5, and remove front cabinet in the arrow direction.

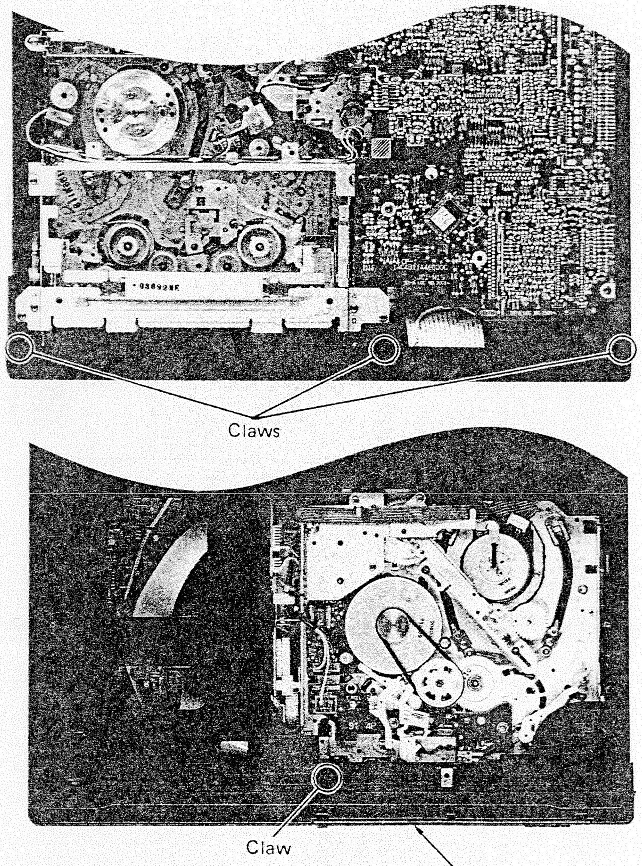

Claws
Claw
Front Cabinet

Fig 2-5.

## 2-4. REMOVAL OF CP-1 BOARD ASSY

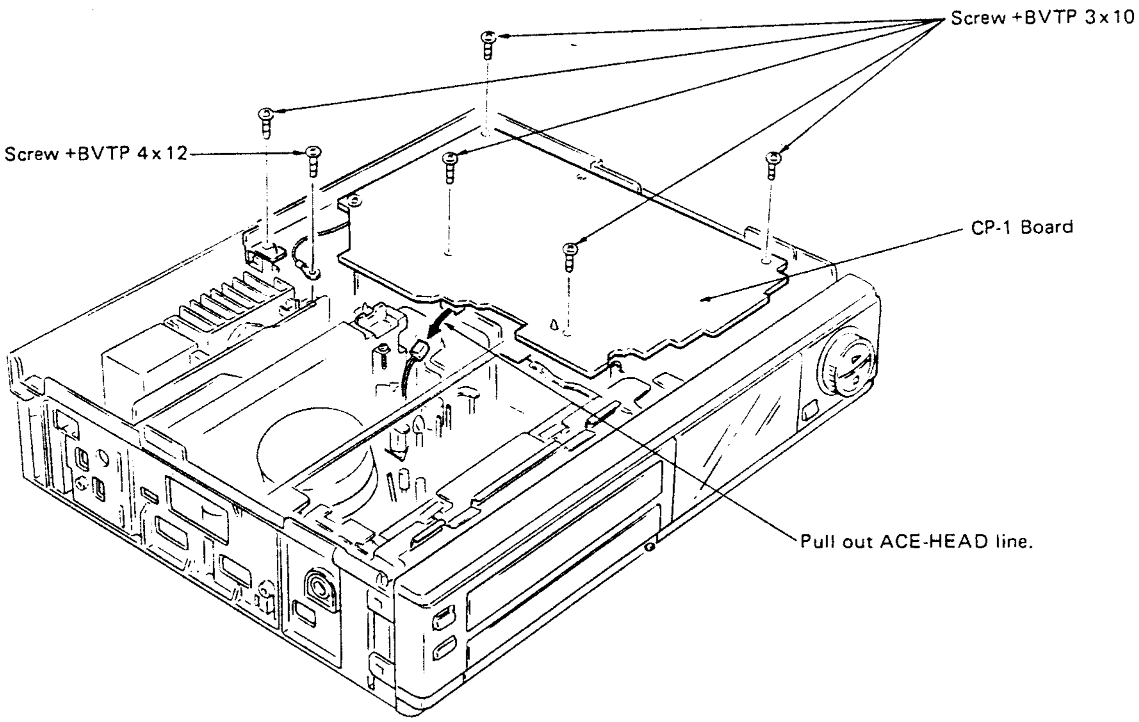

Screw +BVTP 3x10
Screw +BVTP 4x12
CP-1 Board
Pull out ACE-HEAD line.

Fig 2-6.

Put it up on right side CP-1 BOARD ASSY.

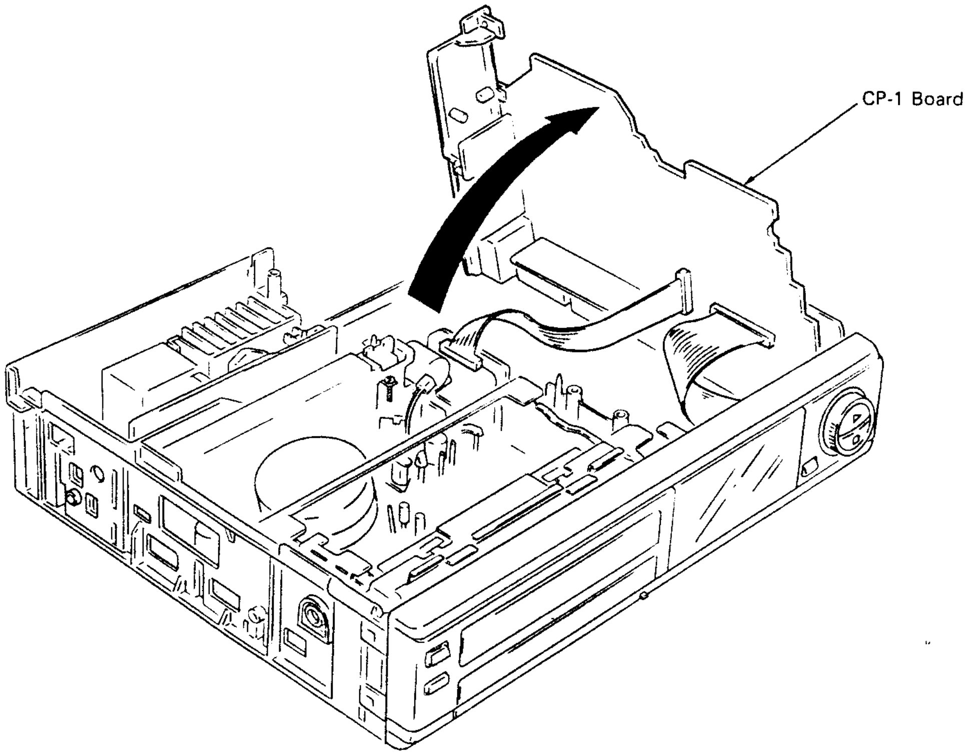
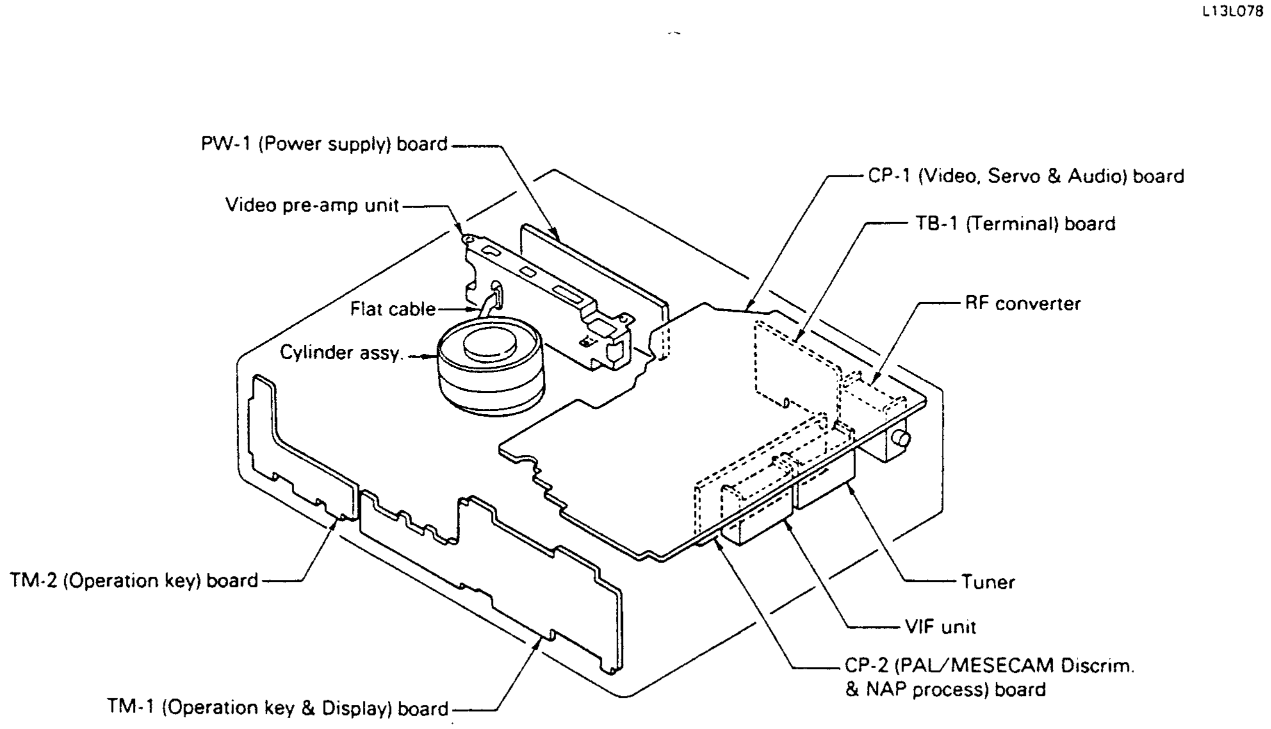


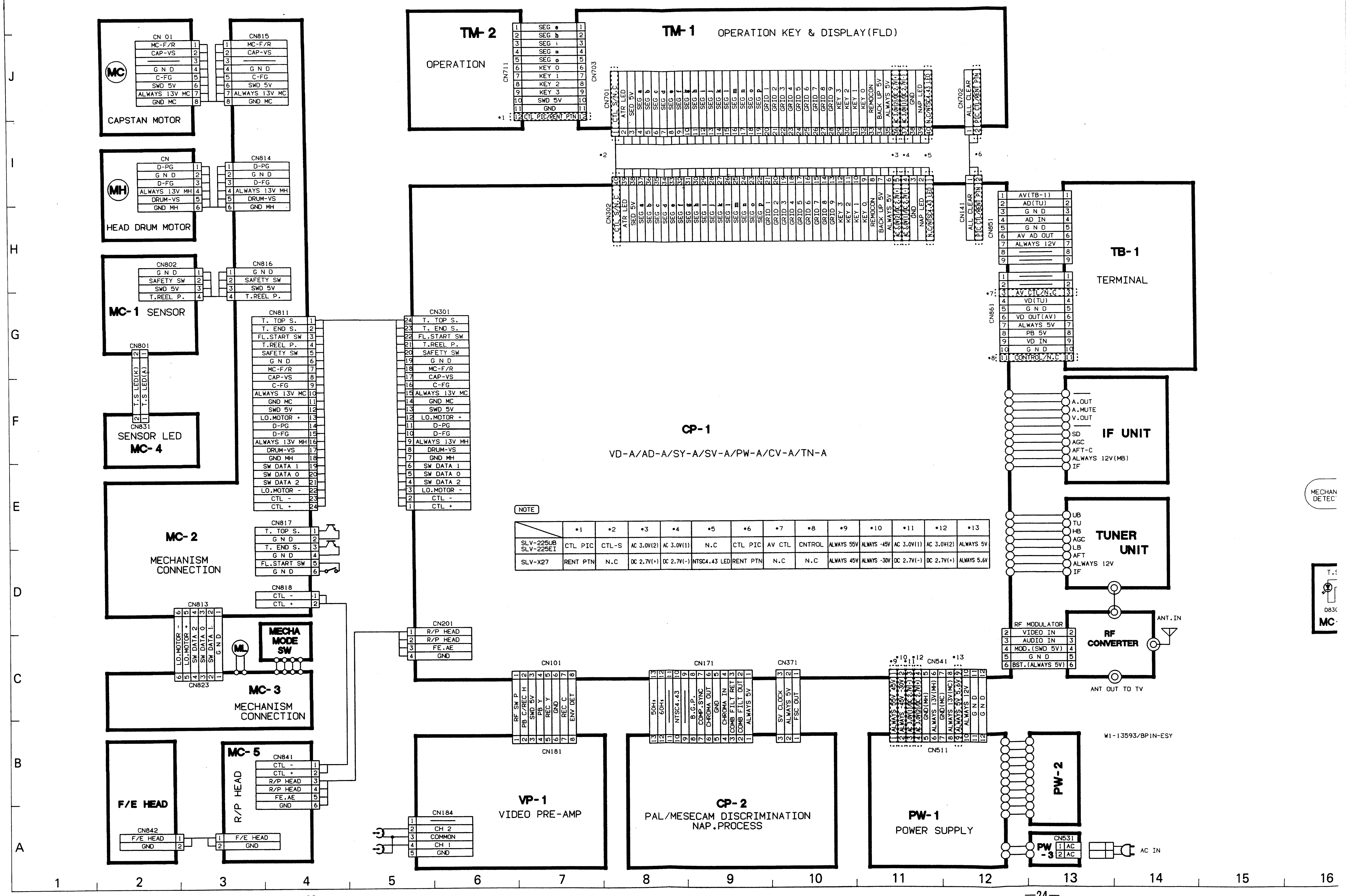
Fig 2-7.

# SECTION 3
# DIAGRAMS

## CIRCUIT BOARD LOCATIONS


L13L078
PW-1 (Power supply) board
Video pre-amp unit
Flat cable
Cylinder assy.
CP-1 (Video, Servo & Audio) board
TB-1 (Terminal) board
RF converter
TM-2 (Operation key) board
Tuner
VIF unit
CP-2 (PAL/MESECAM Discrim. & NAP process) board
TM-1 (Operation key & Display) board

# OVERALL WIRING DIAGRAM


CAPSTAN MOTOR
MC
CN 01
CN815
MC-F/R
CAP-VS
G N D
C-FG
SWD 5V
ALWAYS 13V MC
GND MC
HEAD DRUM MOTOR
MH
CN
CN814
D-PG
G N D
D-FG
ALWAYS 13V MH
DRUM-VS
GND MH
MC-1 SENSOR
CN802
CN816
SAFETY SW
SWD 5V
T.REEL P.
CN801
T.S LED(K)
T.S LED(A)
CN831
SENSOR LED
MC-4
MC-2
MECHANISM CONNECTION
CN811
CN301
T. TOP S.
T. END S.
FL.START SW
T.REEL P.
SAFETY SW
LO.MOTOR +
SW DATA 1
SW DATA 0
SW DATA 2
LO.MOTOR -
CTL -
CTL +
CN817
CN818
CN813
CN823
ML
MECHA MODE SW
MC-3
MECHANISM CONNECTION
F/E HEAD
CN842
MC-5
R/P HEAD
CN841
R/P HEAD
FE.AE
GND
TM-2
OPERATION
CN711
CN703
SEG e
SEG b
SEG i
SEG a
SEG o
KEY 0
KEY 1
KEY 2
KEY 3
SWD 5V
GND
CTL PIC/RENT PTN
TM-1
OPERATION KEY & DISPLAY(FLD)
CN701
CN702
CN302
CN141
CTL S/N.C
ATR LED
SED 5V
SEG a … SEG p
GRID 1 … GRID 9
KEY 0 … KEY 3
REMOCON
BACK UP 5V
ALWAYS 5V
NAP LED
N.C/NTSC4.43 LED
ALL CLEAR
PIC CTL/RENT PTN
CP-1
VD-A/AD-A/SY-A/SV-A/PW-A/CV-A/TN-A
TB-1
TERMINAL
CN851
AV(TB-1)
AD(TU)
AD IN
AV AD OUT
ALWAYS 12V
CN861
AV CTL/N.C
VD(TU)
VD OUT(AV)
ALWAYS 5V
PB 5V
VD IN
CONTROL/N.C
IF UNIT
A.OUT
A.MUTE
V.OUT
SD
AGC
AFT-C
ALWAYS 12V(MB)
IF
TUNER UNIT
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
RF CONVERTER
RF MODULATOR
VIDEO IN
AUDIO IN
MOD.(SWD 5V)
G N D
BST.(ALWAYS 5V)
ANT.IN
ANT OUT TO TV
CN201
R/P HEAD
FE.AE
GND
CN101
CN181
RF SW P
PB C/REC H
SWD 5V
PB Y
REC Y
GND
REC C
ENV DET
VP-1
VIDEO PRE-AMP
CN184
CH 2
COMMON
CH 1
GND
CN171
50H+
60H+
NTSC4.43
B.G.P.
COMP.SYNC
CHROMA OUT
GND
CHROMA IN
CHROMA RET
COMB FILT OUT 1
COMB FILT OUT 2
ALWAYS 5V
CP-2
PAL/MESECAM DISCRIMINATION NAP.PROCESS
CN371
SV CLOCK
ALWAYS 5V
FSC OUT
CN541
CN511
ALWAYS 55V
ALWAYS -45V
AC 3.0V(1)
AC 3.0V(2)
GND(MH)
ALWAYS 13V(MH)
GND(MC)
ALWAYS 13V(MC)
ALWAYS 5V 5.6V
ALWAYS 12V
G N D
PW-1
POWER SUPPLY
PW-2
PW-3
CN531
AC
AC IN
W1-13593/BPIN-ESY
MECHAN
DETEC
T.
D83
MC-
K
J
I
H
G
F
E
D
C
B
A
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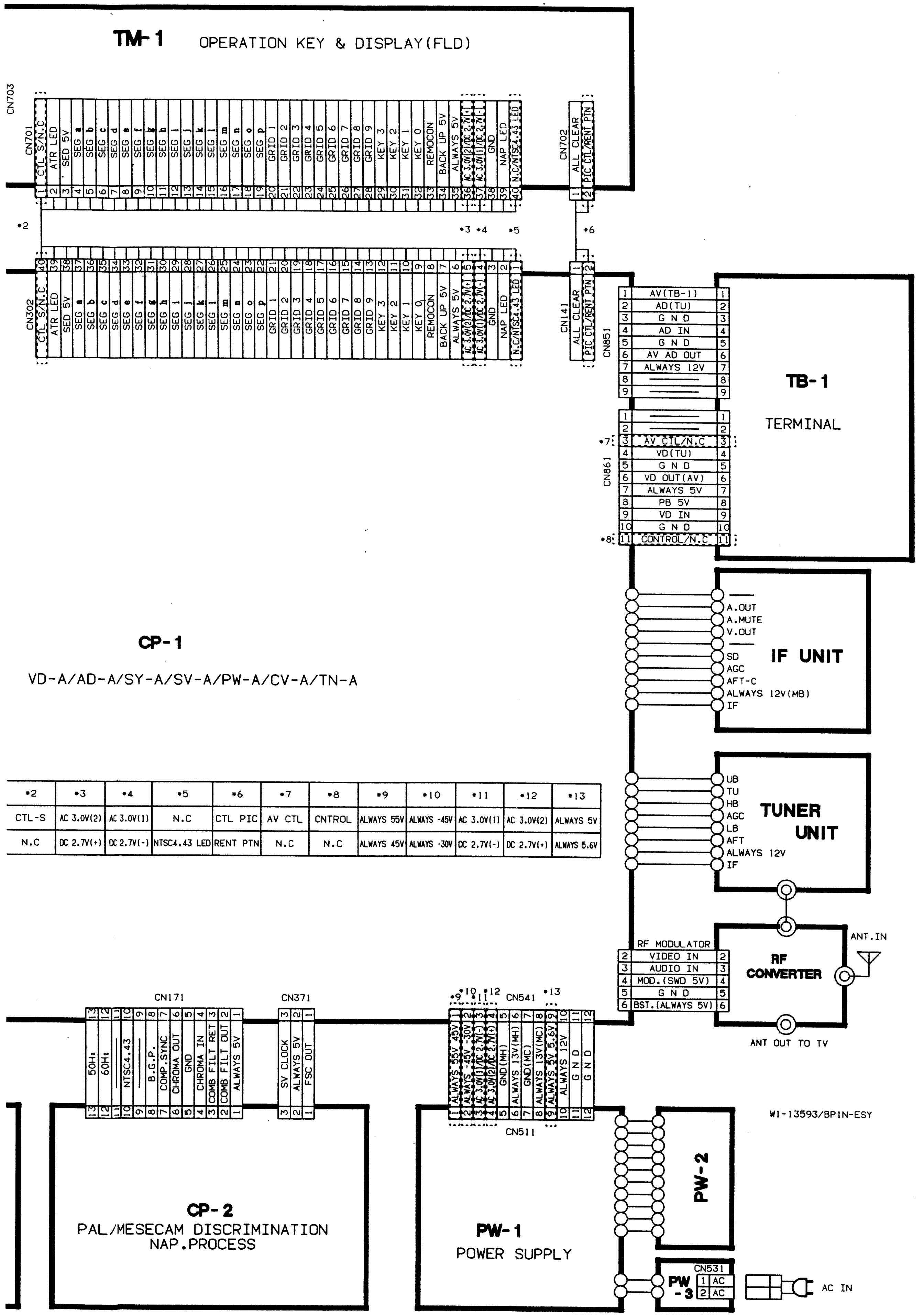
16

NOTE

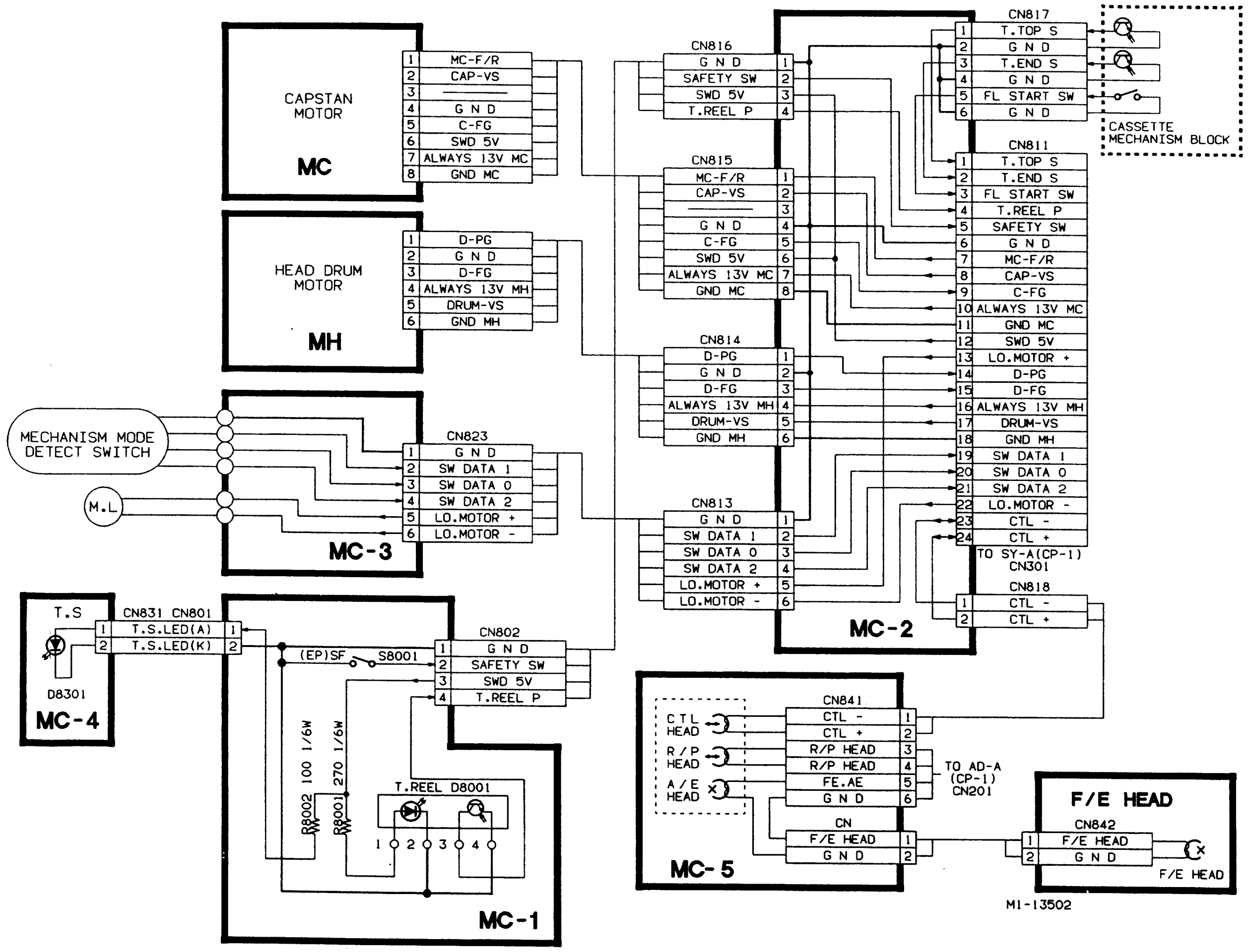
| | •1 | •2 | •3 | •4 | •5 | •6 | •7 | •8 | •9 | •10 | •11 | •12 | •13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLV-225UB<br>SLV-225EI | CTL PIC | CTL-S | AC 3.0V(2) | AC 3.0V(1) | N.C | CTL PIC | AV CTL | CNTROL | ALWAYS 55V | ALWAYS -45V | AC 3.0V(1) | AC 3.0V(2) | ALWAYS 5V |
| SLV-X27 | RENT PTN | N.C | DC 2.7V(+) | DC 2.7V(-) | NTSC4.43 LED | RENT PTN | N.C | N.C | ALWAYS 45V | ALWAYS -30V | DC 2.7V(-) | DC 2.7V(+) | ALWAYS 5.6V |

## RALL WIRING DIAGRAM

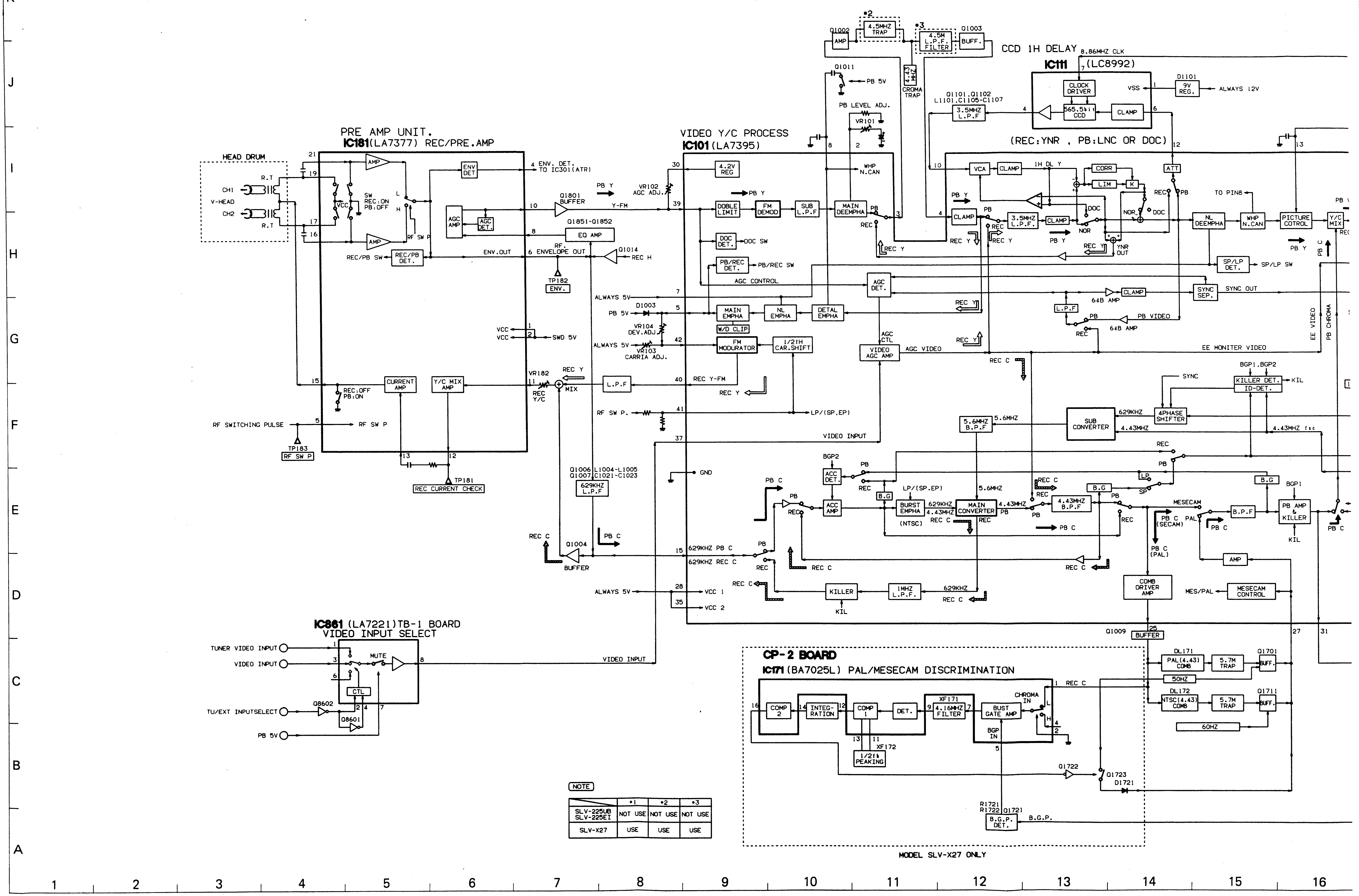

TM-1
OPERATION KEY & DISPLAY(FLD)
CN703
CN701
CN702
CN302
CN141
CN851
CN861
TB-1
TERMINAL
AV(TB-1)
AD(TU)
AD IN
AV AD OUT
ALWAYS 12V
AV CTL/N.C
VD(TU)
VD OUT(AV)
ALWAYS 5V
PB 5V
VD IN
CONTROL/N.C
CP-1
VD-A/AD-A/SY-A/SV-A/PW-A/CV-A/TN-A
IF UNIT
A.OUT
A.MUTE
V.OUT
SD
AGC
AFT-C
ALWAYS 12V(MB)
IF
TUNER UNIT
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
RF MODULATOR
VIDEO IN
AUDIO IN
MOD.(SWD 5V)
G N D
BST.(ALWAYS 5V)
RF CONVERTER
ANT.IN
ANT OUT TO TV
CN171
CN371
CN541
CN511
CP-2
PAL/MESECAM DISCRIMINATION
NAP.PROCESS
PW-1
POWER SUPPLY
PW-2
PW-3
CN531
AC
AC IN
W1-13593/BP1N-ESY

| •2 | •3 | •4 | •5 | •6 | •7 | •8 | •9 | •10 | •11 | •12 | •13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CTL-S | AC 3.0V(2) | AC 3.0V(1) | N.C | CTL PIC | AV CTL | CNTROL | ALWAYS 55V | ALWAYS -45V | AC 3.0V(1) | AC 3.0V(2) | ALWAYS 5V |
| N.C | DC 2.7V(+) | DC 2.7V(-) | NTSC4.43 LED | RENT PTN | N.C | N.C | ALWAYS 45V | ALWAYS -30V | DC 2.7V(-) | DC 2.7V(+) | ALWAYS 5.6V |

## MECHANISM CONNECTION CIRCUIT DIAGRAM


CAPSTAN MOTOR
MC
HEAD DRUM MOTOR
MH
MECHANISM MODE DETECT SWITCH
M.L
MC-3
T.S
D8301
MC-4
MC-1
MC-2
MC-5
F/E HEAD
CASSETTE MECHANISM BLOCK
CN817
CN816
CN815
CN814
CN813
CN811
CN818
CN823
CN831 CN801
CN802
CN841
CN842
TO SY-A(CP-1) CN301
TO AD-A (CP-1) CN201
CTL HEAD
R/P HEAD
A/E HEAD
(EP)SF
S8001
T.REEL D8001
R8002 100 1/6W
R8001 270 1/6W
M1-13502

# VIDEO CIRCUIT BASIC BLOCK DIAGRAM


HEAD DRUM
CH1
V-HEAD
CH2
R.T
PRE AMP UNIT.
IC181(LA7377) REC/PRE.AMP
AMP
ENV DET
AGC AMP
AGC DET.
REC/PB DET.
REC/PB SW
SW REC:ON PB:OFF
RF SW P
4 ENV. DET. TO IC301(ATR)
Q1801 BUFFER
EQ AMP
Q1851-Q1852
6 ENVELOPE OUT
ENV.OUT
Q1014
REC H
TP182 ENV.
VCC
SWD 5V
CURRENT AMP
Y/C MIX AMP
REC:OFF PB:ON
VR182
REC Y/C
MIX
RF SWITCHING PULSE
RF SW P
TP183 RF SW P
TP181 REC CURRENT CHECK
Q1006 L1004-L1005
Q1007 C1021-C1023
629KHZ L.P.F
Q1004 BUFFER
REC C
PB C
VIDEO Y/C PROCESS
IC101(LA7395)
PB Y
VR102 AGC ADJ.
Y-FM
4.2V REG
DOBLE LIMIT
FM DEMOD
SUB L.P.F
MAIN DEEMPHA
DOC DET.
DOC SW
PB/REC DET.
PB/REC SW
AGC CONTROL
AGC DET.
ALWAYS 5V
D1003
PB 5V
VR104 DEV.ADJ.
VR103 CARRIA ADJ.
MAIN EMPHA
NL EMPHA
DETAL EMPHA
W/D CLIP
FM MODURATOR
1/2fH CAR.SHIFT
VIDEO AGC AMP
AGC CTL
AGC VIDEO
L.P.F
REC Y-FM
REC Y
RF SW P.
LP/(SP,EP)
VIDEO INPUT
GND
BGP2
ACC DET.
ACC AMP
B.G
BURST EMPHA
(NTSC)
629KHZ
4.43MHZ
MAIN CONVERTER
5.6MHZ B.P.F
5.6MHZ
4.43MHZ B.P.F
629KHZ PB C
629KHZ REC C
KILLER
KIL
1MHZ L.P.F.
VCC 1
VCC 2
Q1002 AMP
4.5MHZ TRAP
4.5M L.P.F. FILTER
Q1003 BUFF.
*2
*3
4.43 MHZ CROMA TRAP
Q1011
PB 5V
PB LEVEL ADJ.
VR101
WHP N.CAN
CCD 1H DELAY
IC111 (LC8992)
8.86MHZ CLK
CLOCK DRIVER
565.5bit CCD
CLAMP
VSS
D1101 9V REG.
ALWAYS 12V
Q1101,Q1102 L1101,C1105-C1107
3.5MHZ L.P.F
(REC:YNR , PB:LNC OR DOC)
VCA
1H DL Y
CORR
LIM
K
ATT
DOC
NOR
YNR OUT
3.5MHZ L.P.F.
NL DEEMPHA
WHP N.CAN
PICTURE COTROL
Y/C MIX
TO PIN8
SP/LP DET.
SP/LP SW
SYNC SEP.
SYNC OUT
64B AMP
PB VIDEO
EE MONITER VIDEO
EE VIDEO
PB CHROMA
SYNC
BGP1,BGP2
KILLER DET.
ID-DET.
SUB CONVERTER
4PHASE SHIFTER
629KHZ
4.43MHZ
4.43MHZ fsc
B.P.F
PB AMP & KILLER
BGP1
MESECAM
PAL
PB C (SECAM)
PB C (PAL)
AMP
COMB DRIVER AMP
MES/PAL
MESECAM CONTROL
Q1009 BUFFER
IC861 (LA7221)TB-1 BOARD VIDEO INPUT SELECT
TUNER VIDEO INPUT
VIDEO INPUT
MUTE
CTL
TU/EXT INPUTSELECT
Q8602
Q8601
PB 5V
CP-2 BOARD
IC171 (BA7025L) PAL/MESECAM DISCRIMINATION
COMP 2
INTEG-RATION
COMP 1
DET.
XF171 4.16MHZ FILTER
BUST GATE AMP
CHROMA IN
BGP IN
XF172
1/2fH PEAKING
1 REC C
DL171 PAL(4.43) COMB
DL172 NTSC(4.43) COMB
5.7M TRAP
Q1701 BUFF.
Q1711 BUFF.
50HZ
60HZ
Q1722
Q1723
D1721
R1721 R1722 Q1721
B.G.P. DET.
B.G.P.
MODEL SLV-X27 ONLY
K
J
I
H
G
F
E
D
C
B
A
1
2
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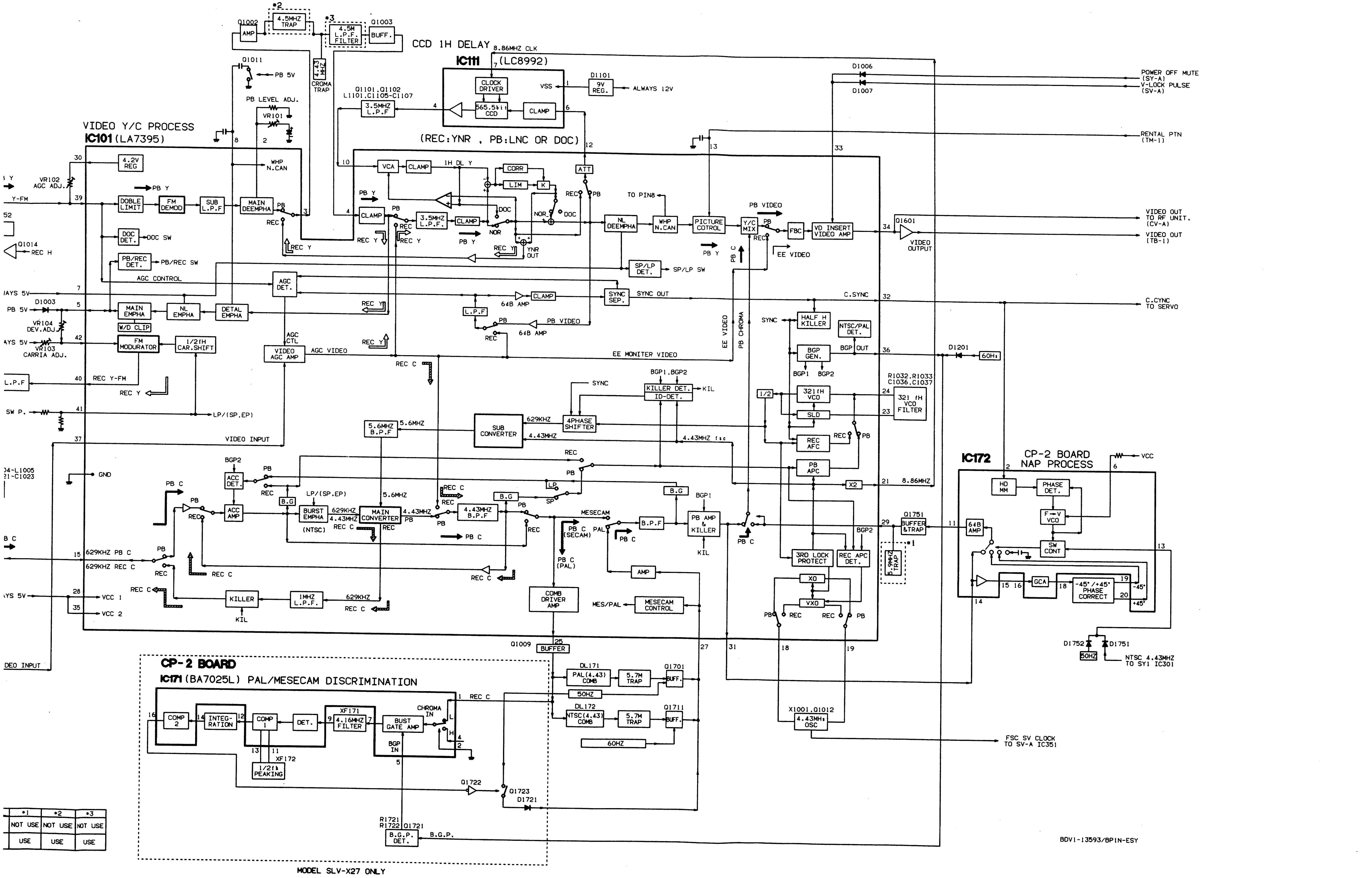
16

NOTE

| | *1 | *2 | *3 |
|---|---|---|---|
| SLV-225UB<br>SLV-225EI | NOT USE | NOT USE | NOT USE |
| SLV-X27 | USE | USE | USE |



VIDEO Y/C PROCESS
IC101 (LA7395)
CCD 1H DELAY
IC111 (LC8992)
(REC:YNR , PB:LNC OR DOC)
8.86MHZ CLK
CLOCK DRIVER
565.5bit CCD
CLAMP
VSS
9V REG.
D1101
ALWAYS 12V
Q1002 AMP
•2 4.5MHZ TRAP
•3 4.5M L.P.F. FILTER
Q1003 BUFF.
4.43 MHZ CROMA TRAP
Q1011
PB 5V
PB LEVEL ADJ.
VR101
Q1101,Q1102 L1101,C1105~C1107
3.5MHZ L.P.F
4.2V REG
WHP N.CAN
VR102 AGC ADJ.
Y-FM
DOBLE LIMIT
FM DEMOD
SUB L.P.F
MAIN DEEMPHA
PB Y
DOC DET.
DOC SW
Q1014 REC H
PB/REC DET.
PB/REC SW
AGC CONTROL
AGC DET.
ALWAYS 5V
D1003
PB 5V
MAIN EMPHA
NL EMPHA
DETAL EMPHA
W/D CLIP
VR104 DEV.ADJ
VR103 CARRIA ADJ.
FM MODURATOR
1/2H CAR.SHIFT
AGC CTL
VIDEO AGC AMP
AGC VIDEO
L.P.F
REC Y-FM
REC Y
SW P.
LP/(SP,EP)
VIDEO INPUT
GND
VCA
CLAMP
1H DL Y
CORR
LIM
K
ATT
3.5MHZ L.P.F.
DOC
NOR
YNR OUT
64B AMP
L.P.F
PB VIDEO
NL DEEMPHA
WHP N.CAN
TO PIN8
PICTURE COTROL
Y/C MIX
FBC
VD INSERT VIDEO AMP
Q1601 VIDEO OUTPUT
SP/LP DET.
SP/LP SW
SYNC SEP.
SYNC OUT
C.SYNC
EE VIDEO
EE MONITER VIDEO
PB CHROMA
HALF H KILLER
NTSC/PAL DET.
BGP GEN.
BGP1 BGP2
D1006
D1007
POWER OFF MUTE (SY-A)
V-LOCK PULSE (SV-A)
RENTAL PTN (TM-1)
VIDEO OUT TO RF UNIT. (CV-A)
VIDEO OUT (TB-1)
C.CYNC TO SERVO
D1201
60Hz
R1032,R1033 C1036,C1037
321 fH VCO FILTER
1/2
321fH VCO
SLD
REC AFC
PB APC
X2
8.86MHZ
BGP1,BGP2
KILLER DET. ID-DET.
KIL
SYNC
4PHASE SHIFTER
SUB CONVERTER
629KHZ
4.43MHZ
4.43MHZ fsc
5.6MHZ B.P.F
ACC DET.
ACC AMP
BURST EMPHA
(NTSC)
MAIN CONVERTER
4.43MHZ B.P.F
B.G
MESECAM
PB C (SECAM)
PB C (PAL)
B.P.F
PB AMP & KILLER
3RD LOCK PROTECT
REC APC DET.
XO
VXO
5.5MHZ TRAP
Q1751 BUFFER &TRAP
629KHZ PB C
629KHZ REC C
ALWAYS 5V
VCC 1
VCC 2
KILLER
1MHZ L.P.F.
COMB DRIVER AMP
AMP
MESECAM CONTROL
MES/PAL
Q1009 BUFFER
IC172
CP-2 BOARD NAP PROCESS
VCC
HD MM
PHASE DET.
F→V VCO
SW CONT
64B AMP
GCA
-45°/+45° PHASE CORRECT
D1752 D1751
50HZ
NTSC 4.43MHZ TO SY1 IC301
CP-2 BOARD
IC171 (BA7025L) PAL/MESECAM DISCRIMINATION
COMP 2
INTEG-RATION
COMP 1
DET.
XF171 4.16MHZ FILTER
BUST GATE AMP
CHROMA IN
BGP IN
XF172 1/2fh PEAKING
Q1722
Q1723
D1721
R1721 R1722 Q1721 B.G.P. DET.
B.G.P.
DL171 PAL(4.43) COMB
5.7M TRAP
Q1701 BUFF.
50HZ
DL172 NTSC(4.43) COMB
Q1711 BUFF.
60HZ
X1001,Q1012 4.43MHz OSC
FSC SV CLOCK TO SV-A IC351
BDV1-13593/BPIN-ESY
MODEL SLV-X27 ONLY
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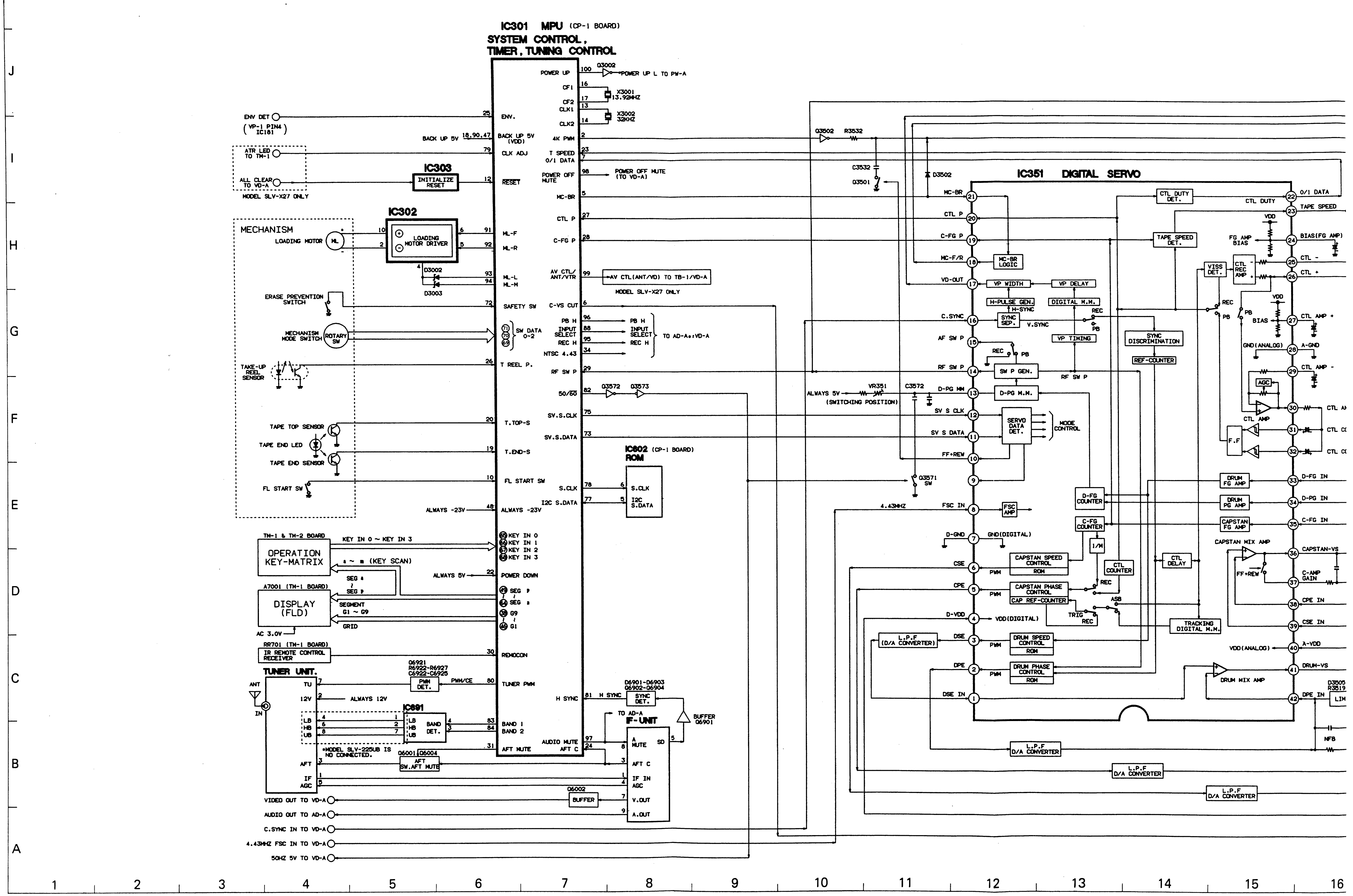
| •1 | •2 | •3 |
|---|---|---|
| NOT USE | NOT USE | NOT USE |
| USE | USE | USE |

## SYSTEM CONTROL & SERVO CIRCUIT BASIC BLOCK DIAGRAM


K
J
I
H
G
F
E
D
C
B
A
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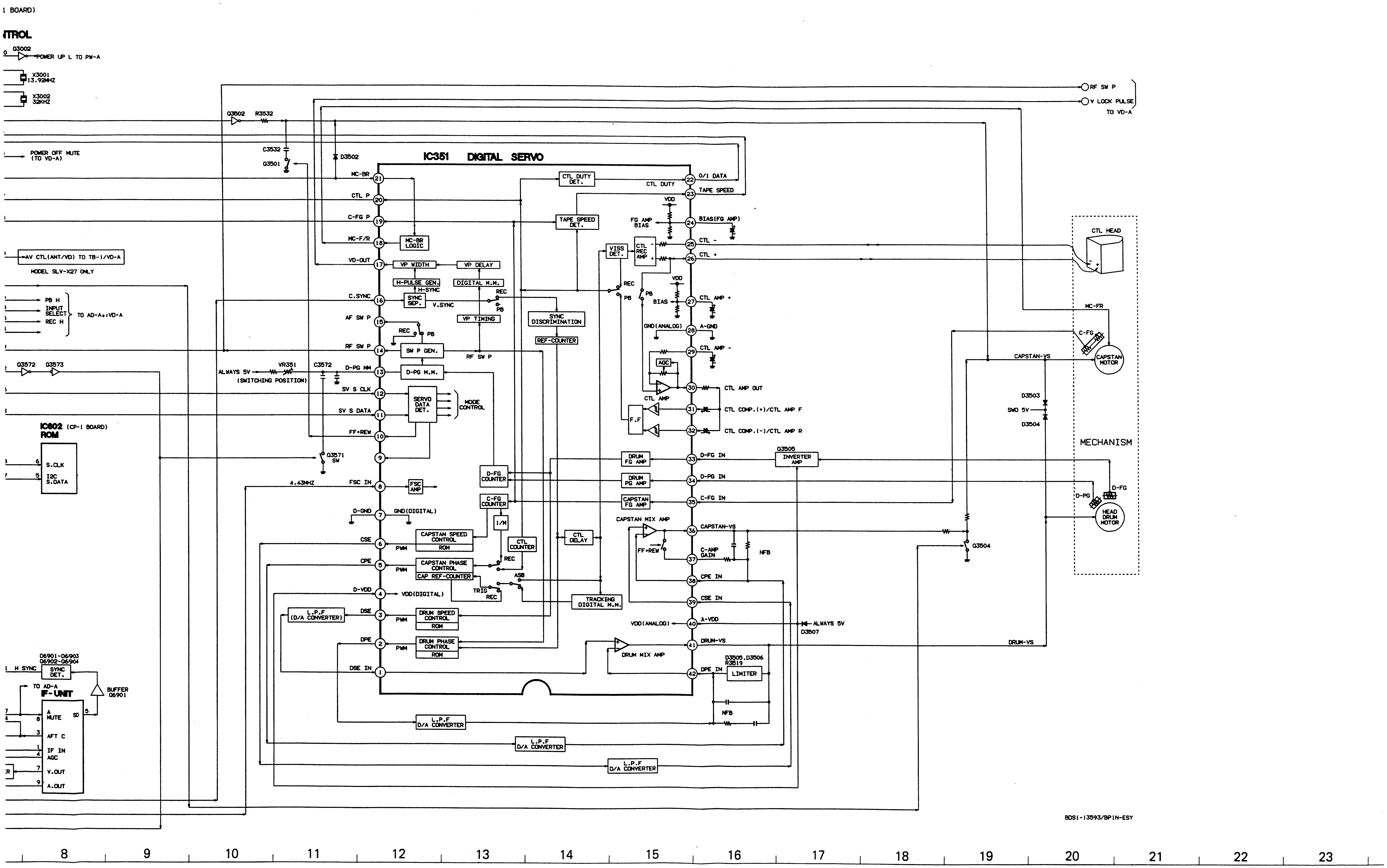
16
IC301 MPU (CP-1 BOARD)
SYSTEM CONTROL, TIMER, TUNING CONTROL
POWER UP
CF1
CF2
CLK1
CLK2
4K PWM
T SPEED
0/1 DATA
POWER OFF MUTE
MC-BR
CTL P
C-FG P
AV CTL/ ANT/VTR
C-VS CUT
PB H
INPUT SELECT
REC H
NTSC 4.43
RF SW P
50/60
SV.S.CLK
SV.S.DATA
S.CLK
I2C S.DATA
H SYNC
AUDIO MUTE
AFT C
ENV.
BACK UP 5V (VDD)
CLK ADJ
RESET
ML-F
ML-R
ML-L
ML-M
SAFETY SW
SW DATA 0-2
T REEL P.
T.TOP-S
T.END-S
FL START SW
ALWAYS -23V
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
POWER DOWN
SEG p
SEG a
G9
G1
REMOCON
TUNER PWM
BAND 1
BAND 2
AFT MUTE
Q3002
POWER UP L TO PW-A
X3001 13.92MHZ
X3002 32KHZ
POWER OFF MUTE (TO VD-A)
AV CTL(ANT/VD) TO TB-1/VD-A
MODEL SLV-X27 ONLY
TO AD-A, VD-A
Q3572
Q3573
IC602 (CP-1 BOARD) ROM
S.CLK
I2C S.DATA
D6901-D6903
D6902-D6904
SYNC DET.
TO AD-A
IF-UNIT
A MUTE
SD
AFT C
IF IN
AGC
V.OUT
A.OUT
BUFFER D6901
D6002
BUFFER
ENV DET
(VP-1 PIN4 IC181)
BACK UP 5V
ATR LED TO TM-1
ALL CLEAR TO VD-A
MODEL SLV-X27 ONLY
IC303
INITIALIZE RESET
IC302
LOADING MOTOR DRIVER
D3002
D3003
MECHANISM
LOADING MOTOR
ML
ERASE PREVENTION SWITCH
MECHANISM MODE SWITCH
ROTARY SW
TAKE-UP REEL SENSOR
TAPE TOP SENSOR
TAPE END LED
TAPE END SENSOR
FL START SW
ALWAYS -23V
TM-1 & TM-2 BOARD
OPERATION KEY-MATRIX
KEY IN 0 ~ KEY IN 3
a ~ m (KEY SCAN)
ALWAYS 5V
SEG a ~ SEG p
A7001 (TM-1 BOARD)
DISPLAY (FLD)
SEGMENT
G1 ~ G9
GRID
AC 3.0V
RR701 (TM-1 BOARD)
IR REMOTE CONTROL RECEIVER
TUNER UNIT
ANT
IN
TU
12V
ALWAYS 12V
LB
HB
UB
AFT
IF
AGC
Q6921
R6922-R6927
C6922-C6925
PWM DET.
PWM/CE
IC691
BAND DET.
*MODEL SLV-225UB IS NO CONNECTED.
Q6001, Q6004
AFT SW.AFT MUTE
VIDEO OUT TO VD-A
AUDIO OUT TO AD-A
C.SYNC IN TO VD-A
4.43MHZ FSC IN TO VD-A
50HZ 5V TO VD-A
Q3502
R3532
C3532
Q3501
D3502
IC351 DIGITAL SERVO
MC-BR
CTL P
C-FG P
MC-F/R
VD-OUT
C.SYNC
AF SW P
RF SW P
D-PG MM
SV S CLK
SV S DATA
FF+REW
FSC IN
D-GND
CSE
CPE
D-VDD
DSE
DPE
DSE IN
ALWAYS 5V
VR351
(SWITCHING POSITION)
C3572
Q3571 SW
4.43MHZ
MC-BR LOGIC
VP WIDTH
VP DELAY
H-PULSE GEN.
DIGITAL M.M.
H-SYNC
SYNC SEP.
V.SYNC
REC
PB
VP TIMING
SW P GEN.
RF SW P
D-PG M.M.
SERVO DATA DET.
MODE CONTROL
FSC AMP
GND(DIGITAL)
PWM
CAPSTAN SPEED CONTROL ROM
CAPSTAN PHASE CONTROL
CAP REF-COUNTER
VDD(DIGITAL)
TRIG
ASB
DRUM SPEED CONTROL ROM
DRUM PHASE CONTROL ROM
L.P.F (D/A CONVERTER)
L.P.F D/A CONVERTER
D-FG COUNTER
C-FG COUNTER
I/M
CTL COUNTER
CTL DELAY
TRACKING DIGITAL M.M.
CTL DUTY DET.
TAPE SPEED DET.
SYNC DISCRIMINATION
REF-COUNTER
VISS DET.
CTL REC AMP
CTL AMP
F.F
AGC
DRUM FG AMP
DRUM PG AMP
CAPSTAN FG AMP
CAPSTAN MIX AMP
FF+REW
DRUM MIX AMP
VDD
FG AMP BIAS
BIAS
GND(ANALOG)
VDD(ANALOG)
0/1 DATA
CTL DUTY
TAPE SPEED
BIAS(FG AMP)
CTL -
CTL +
CTL AMP +
A-GND
CTL AMP -
CTL AM
CTL CO
CTL CO
D-FG IN
D-PG IN
C-FG IN
CAPSTAN-VS
C-AMP GAIN
CPE IN
CSE IN
A-VDD
DRUM-VS
DPE IN
Q3505
R3519
LIM
NFB

# SYSTEM CONTROL & SERVO CIRCUIT BASIC BLOCK DIAGRAM



1 BOARD)
ITROL
Q3002
POWER UP L TO PW-A
X3001 13.92MHZ
X3002 32KHZ
POWER OFF MUTE (TO VD-A)
AV CTL(ANT/VD) TO TB-1/VD-A
MODEL SLV-X27 ONLY
PB H
INPUT SELECT
REC H
TO AD-A,VD-A
Q3572
Q3573
IC602 (CP-1 BOARD)
ROM
S.CLK
I2C S.DATA
D6901-D6903
D6902-D6904
H SYNC
SYNC DET.
TO AD-A
IF-UNIT
BUFFER Q6901
A MUTE
SD
AFT C
IF IN
AGC
V.OUT
A.OUT
Q3502
R3532
C3532
Q3501
D3502
IC351 DIGITAL SERVO
MC-BR
CTL P
C-FG P
MC-F/R
VD-OUT
C.SYNC
AF SW P
RF SW P
ALWAYS 5V
VR351
(SWITCHING POSITION)
C3572
D-PG MM
SV S CLK
SV S DATA
FF+REW
Q3571 SW
4.43MHZ
FSC IN
D-GND
GND(DIGITAL)
CSE
CPE
D-VDD
VDD(DIGITAL)
DSE
DPE
DSE IN
PWM
L.P.F (D/A CONVERTER)
MC-BR LOGIC
VP WIDTH
VP DELAY
H-PULSE GEN.
H-SYNC
DIGITAL M.M.
SYNC SEP.
V.SYNC
REC
PB
VP TIMING
SW P GEN.
D-PG M.M.
SERVO DATA DET.
MODE CONTROL
FSC AMP
D-FG COUNTER
C-FG COUNTER
1/M
CAPSTAN SPEED CONTROL
ROM
CAPSTAN PHASE CONTROL
CAP REF-COUNTER
CTL COUNTER
TRIG
ASB
DRUM SPEED CONTROL
DRUM PHASE CONTROL
CTL DUTY DET.
CTL DUTY
TAPE SPEED DET.
SYNC DISCRIMINATION
REF-COUNTER
CTL DELAY
TRACKING DIGITAL M.M.
VISS DET.
CTL REC AMP
FG AMP BIAS
VDD
BIAS
GND(ANALOG)
AGC
CTL AMP
F.F
DRUM FG AMP
DRUM PG AMP
CAPSTAN FG AMP
CAPSTAN MIX AMP
FF+REW
NFB
DRUM MIX AMP
D/A CONVERTER
0/1 DATA
TAPE SPEED
BIAS(FG AMP)
CTL -
CTL +
CTL AMP +
A-GND
CTL AMP -
CTL AMP OUT
CTL COMP.(+)/CTL AMP F
CTL COMP.(-)/CTL AMP R
D-FG IN
D-PG IN
C-FG IN
CAPSTAN-VS
C-AMP GAIN
CPE IN
CSE IN
A-VDD
VDD(ANALOG)
ALWAYS 5V
D3507
DRUM-VS
DPE IN
D3505,D3506 R3519
LIMITER
Q3505 INVERTER AMP
Q3504
RF SW P
V LOCK PULSE
TO VD-A
CTL HEAD
MC-FR
C-FG
CAPSTAN MOTOR
D3503
SWD 5V
D3504
MECHANISM
D-PG
D-FG
HEAD DRUM MOTOR
BDS1-13593/BP1N-ESY
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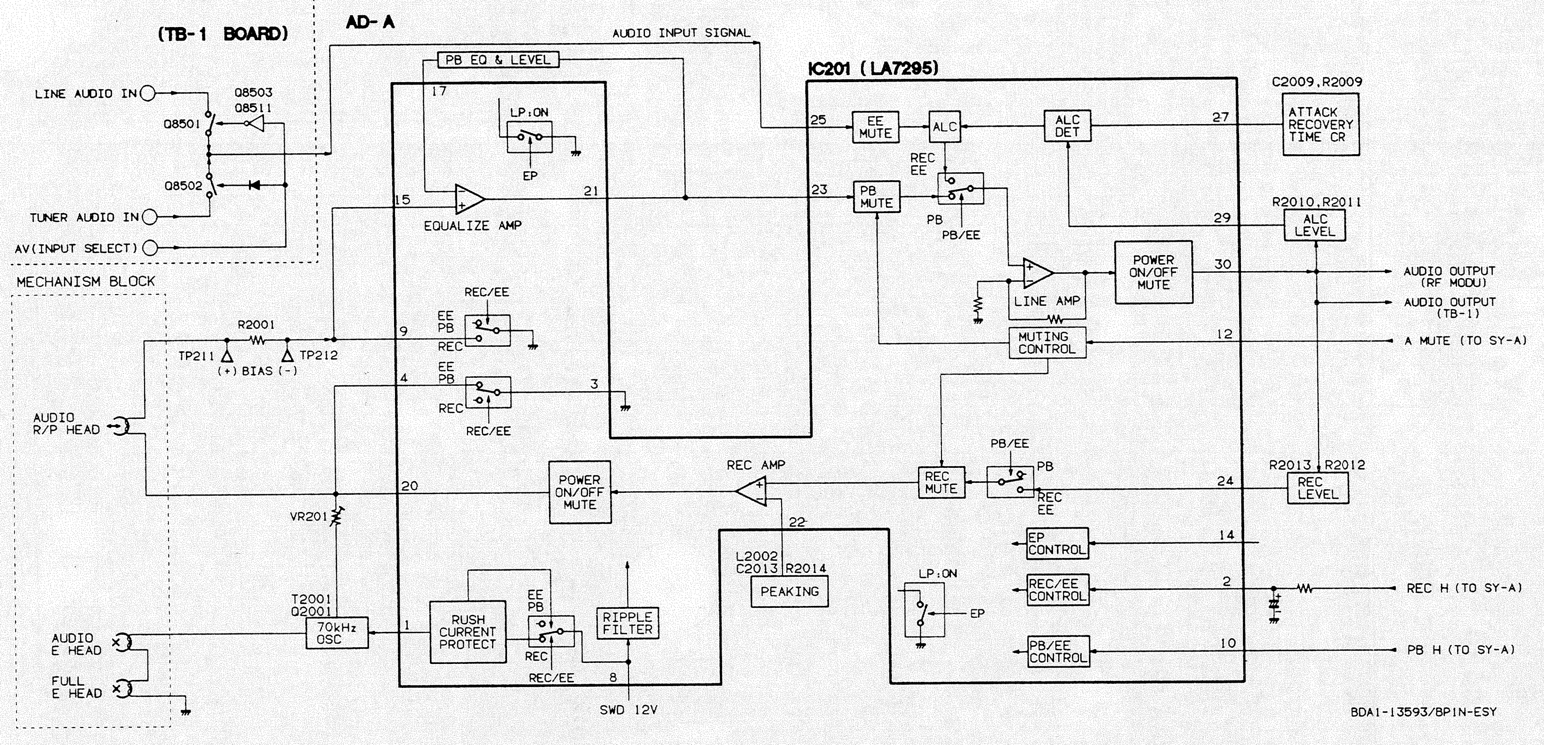
## SECTION 4
## PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### AUDIO CIRCUIT BASIC BLOCK DIAGRAM


(TB-1 BOARD)
AD-A
LINE AUDIO IN
Q8503
Q8511
Q8501
Q8502
TUNER AUDIO IN
AV(INPUT SELECT)
MECHANISM BLOCK
AUDIO INPUT SIGNAL
PB EQ & LEVEL
IC201 (LA7295)
LP: ON
EP
EQUALIZE AMP
EE MUTE
ALC
ALC DET
REC EE
PB MUTE
PB
PB/EE
C2009, R2009
ATTACK RECOVERY TIME CR
R2010, R2011
ALC LEVEL
POWER ON/OFF MUTE
LINE AMP
MUTING CONTROL
AUDIO OUTPUT (RF MODU)
AUDIO OUTPUT (TB-1)
A MUTE (TO SY-A)
R2001
TP211
(+) BIAS (-)
TP212
REC/EE
EE
PB
REC
AUDIO R/P HEAD
VR201
POWER ON/OFF MUTE
REC AMP
REC MUTE
R2013, R2012
REC LEVEL
EP CONTROL
REC/EE CONTROL
PB/EE CONTROL
REC H (TO SY-A)
PB H (TO SY-A)
L2002
C2013
R2014
PEAKING
T2001
Q2001
70kHz OSC
RUSH CURRENT PROTECT
RIPPLE FILTER
SWD 12V
AUDIO E HEAD
FULL E HEAD
17
25
27
15
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23
29
30
12
9
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3
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24
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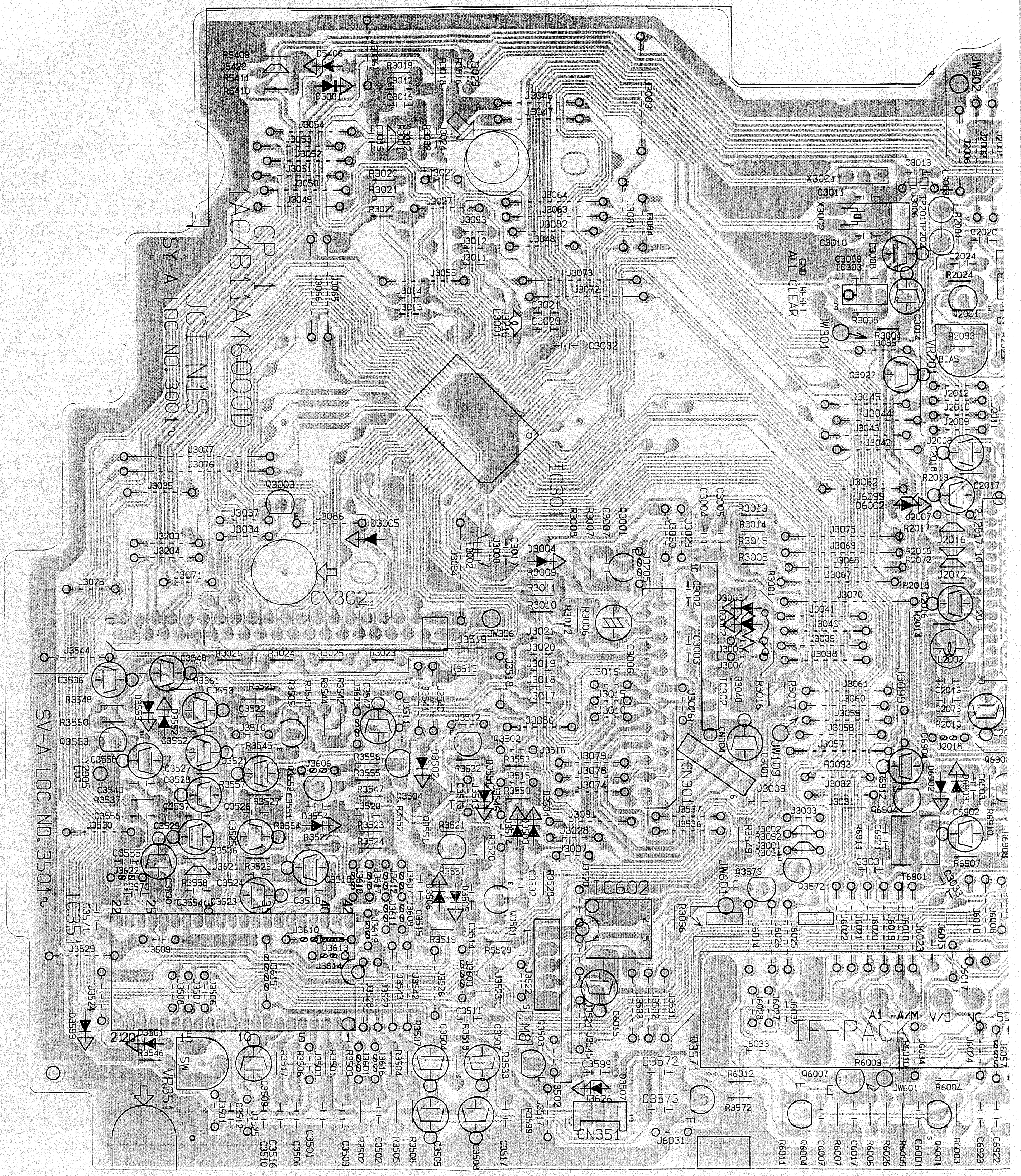
14
2
1
10
8
BDA1-13593/BP1N-ESY

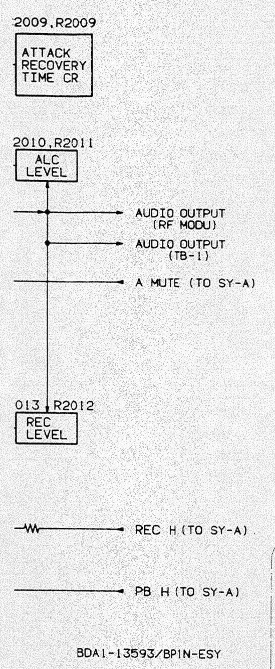

CP-1
1ACAB11A4600D
JCI-N1S
SY-A LOC NO. 3001~
SV-A LOC NO. 3501~
CN302
IC301
IC302
IC602
CN301
CN351
IC351
VR351
RESET
ALL CLEAR
IF-PACK
Q3003
D3005
J3035
J3037
J3034
J3086
J3203
J3204
J3071
J3077
J3076
J3049
J3050
J3051
J3052
J3053
J3054
R3020
R3021
R3022

K J I H G F E D C B A

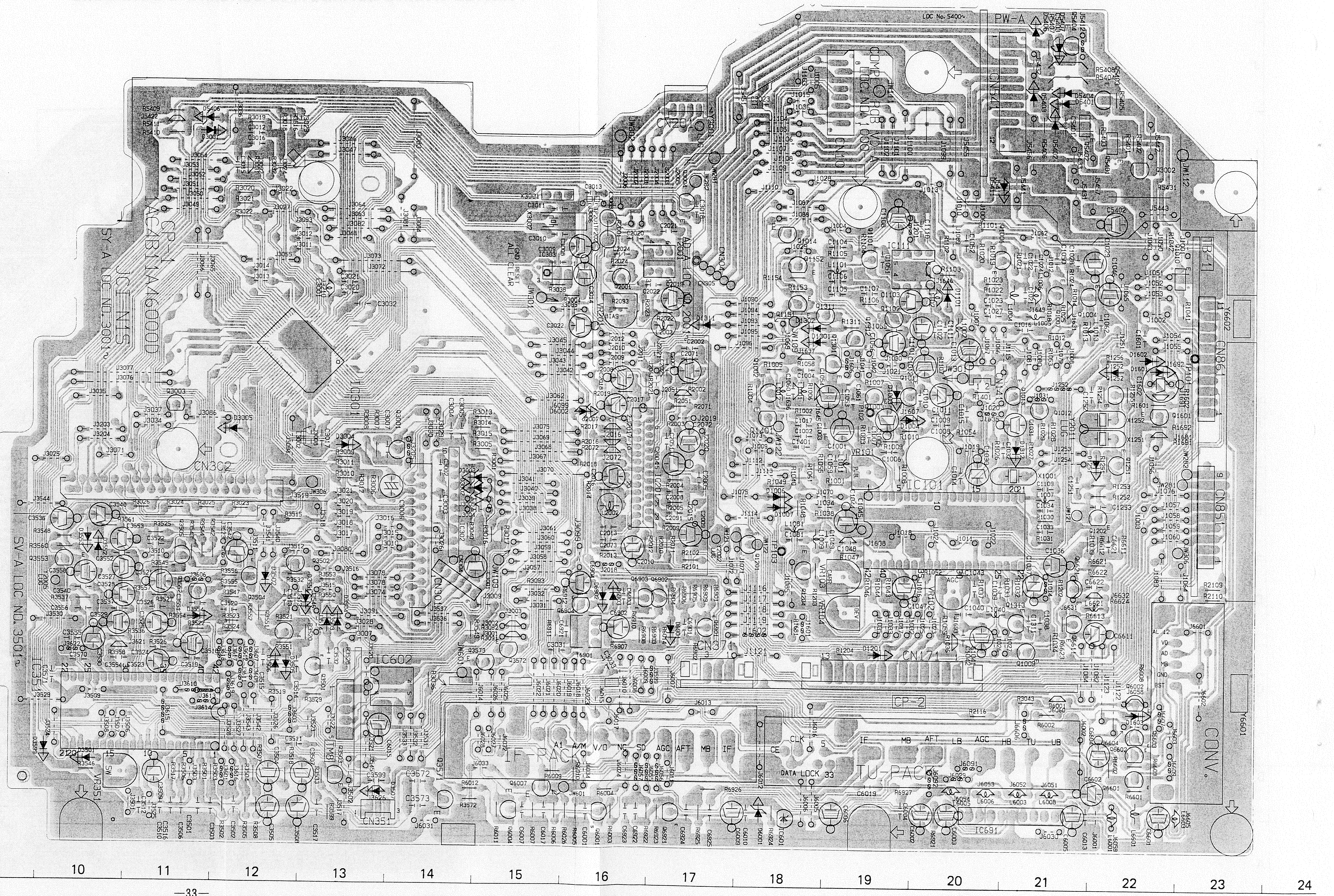
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

# SECTION 4
# PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

## CP-1 P. C. B.



2009,R2009
ATTACK RECOVERY TIME CR
2010,R2011
ALC LEVEL
AUDIO OUTPUT (RF MODU)
AUDIO OUTPUT (TB-1)
A MUTE (TO SY-A)
013,R2012
REC LEVEL
REC H (TO SY-A)
PB H (TO SY-A)
BDA1-13593/BPIN-ESY



LDC No. 5400~
PW-A
COMP PCB VDA LOC No.1000~
CN1001
AD-A LOC NO. 2001~
CP-1
1ACAB1AA600D
JC1 N15
SY-A LOC NO. 3001~
CN3C2
IC301
CN301
SY-A LOC NO. 3501~
IC351
IC602
CN351
VR351
SW
IC101
CN171
CN371
CN861
CN851
TB-1
CP-2
IF-PACK
A1
A/M
V/O
NC
SD
AGC
AFT
MB
IF
TU-PACK
CE
CLK
IF
MB
AFT
LB
AGC
HB
TU
UB
DATA LOCK 33
IC691
CONV.
AL 12
VD
AD
MB
GND
BST
Y6601
Y6602
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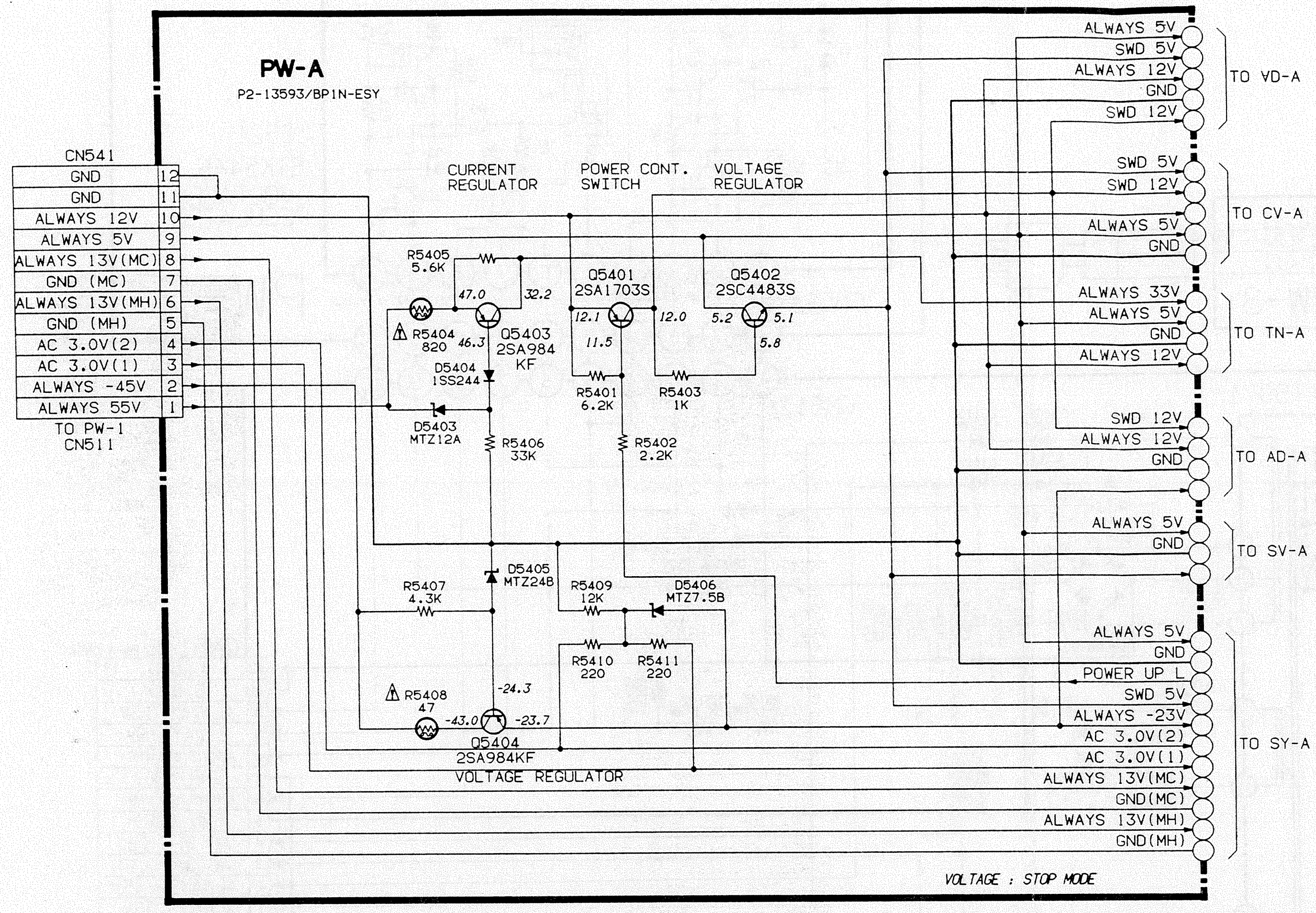
## CP-1 BOARD (PW-A) POWER SUPPLY CIRCUIT DIAGRAM (SLV-225UB, SLV-225EI ONLY)


PW-A
P2-13593/BP1N-ESY
CN541
GND 12
GND 11
ALWAYS 12V 10
ALWAYS 5V 9
ALWAYS 13V(MC) 8
GND (MC) 7
ALWAYS 13V(MH) 6
GND (MH) 5
AC 3.0V(2) 4
AC 3.0V(1) 3
ALWAYS -45V 2
ALWAYS 55V 1
TO PW-1 CN511
CURRENT REGULATOR
POWER CONT. SWITCH
VOLTAGE REGULATOR
R5405 5.6K
Q5401 2SA1703S
Q5402 2SC4483S
Q5403 2SA984 KF
R5404 820
D5404 1SS244
R5401 6.2K
R5403 1K
D5403 MTZ12A
R5406 33K
R5402 2.2K
R5407 4.3K
D5405 MTZ24B
R5409 12K
D5406 MTZ7.5B
R5410 220
R5411 220
R5408 47
Q5404 2SA984KF
VOLTAGE REGULATOR
ALWAYS 5V
SWD 5V
ALWAYS 12V
GND
SWD 12V
TO VD-A
SWD 5V
SWD 12V
ALWAYS 5V
GND
TO CV-A
ALWAYS 33V
ALWAYS 5V
GND
ALWAYS 12V
TO TN-A
SWD 12V
ALWAYS 12V
GND
TO AD-A
ALWAYS 5V
GND
TO SV-A
ALWAYS 5V
GND
POWER UP L
SWD 5V
ALWAYS -23V
AC 3.0V(2)
AC 3.0V(1)
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
TO SY-A
VOLTAGE : STOP MODE

NOTES:

1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p=pico farad
3. All inductance values in "mH" unless otherwise noted. μ=micro henry

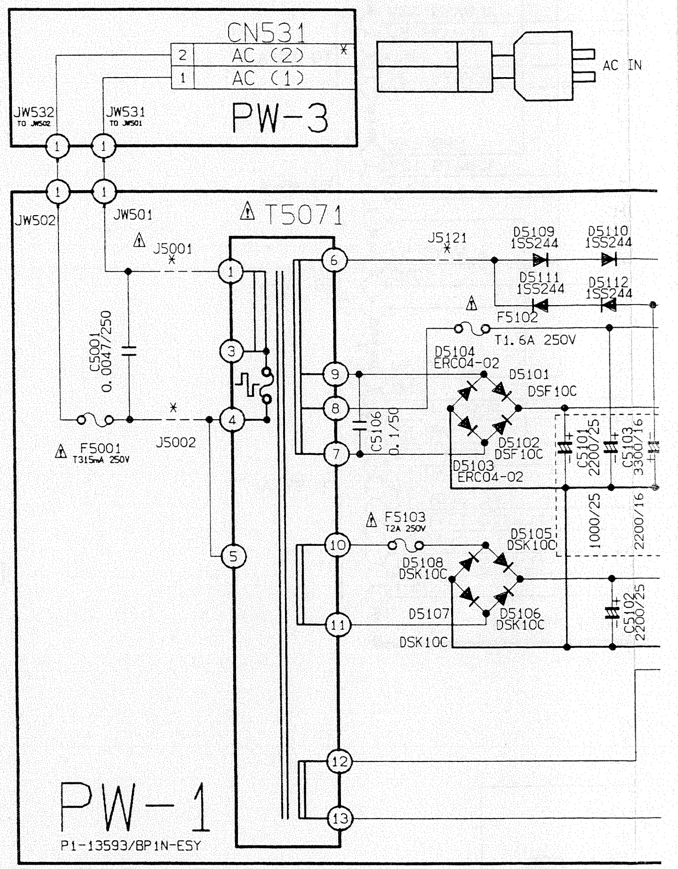
### PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL ( ⚠ ) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SIMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

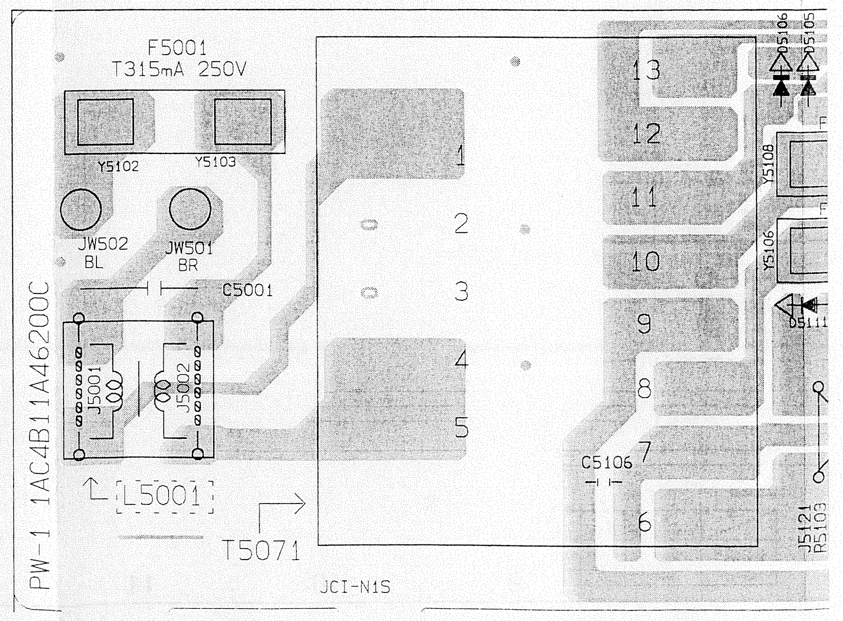
## PW-1, 2, 3 BOARD POWER SUPPLY CIRC

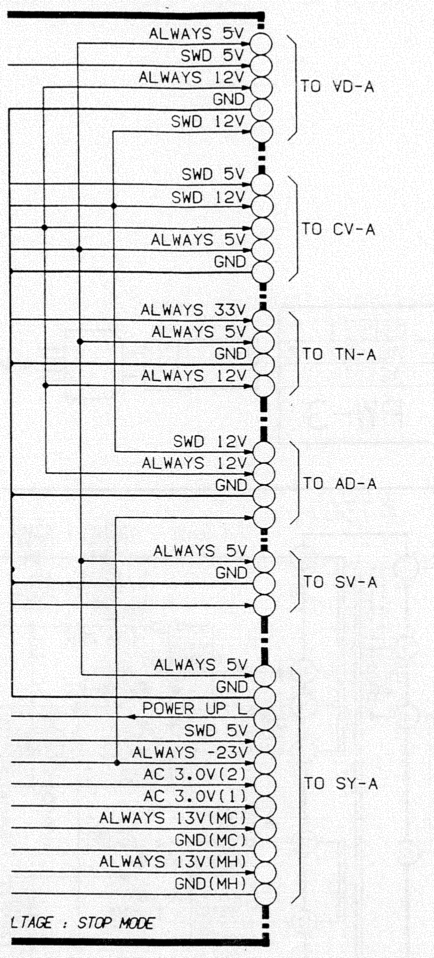
NOTE

| | *1 | |
|---|---|---|
| | C5101 | C5103 |
| SLV-225UB | 1000/25 | 2200/16 |
| SLV-225EI | 2200/25 | 3300/16 |


CN531
AC (2)
AC (1)
AC IN
PW-3
JW532
JW531
JW502
JW501
J5001
T5071
J5121
D5109 1SS244
D5110 1SS244
D5111 1SS244
D5112 1SS244
F5102 T1.6A 250V
D5104 ERC04-02
D5101 DSF10C
D5102 DSF10C
D5103 ERC04-02
C5001 0.0047/250
F5001 T315mA 250V
J5002
C5106 0.1/50
F5103 T2A 250V
D5105 DSK10C
D5108 DSK10C
D5107 DSK10C
D5106 DSK10C
PW-1
P1-13593/BP1N-ESY

## PW-1 P. C.


F5001
T315mA 250V
Y5102
Y5103
JW502 BL
JW501 BR
C5001
J5001
J5002
L5001
T5071
PW-1 1AC4B11A46200C
JCI-N1S
C5106
D5106
D5105
D5108
D5111
Y5106
J5121
R5103


ALWAYS 5V
SWD 5V
ALWAYS 12V
GND
SWD 12V
TO VD-A
SWD 5V
SWD 12V
ALWAYS 5V
GND
TO CV-A
ALWAYS 33V
ALWAYS 5V
GND
ALWAYS 12V
TO TN-A
SWD 12V
ALWAYS 12V
GND
TO AD-A
ALWAYS 5V
GND
TO SV-A
ALWAYS 5V
GND
POWER UP L
SWD 5V
ALWAYS -23V
AC 3.0V(2)
AC 3.0V(1)
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
TO SY-A
LTAGE : STOP MODE

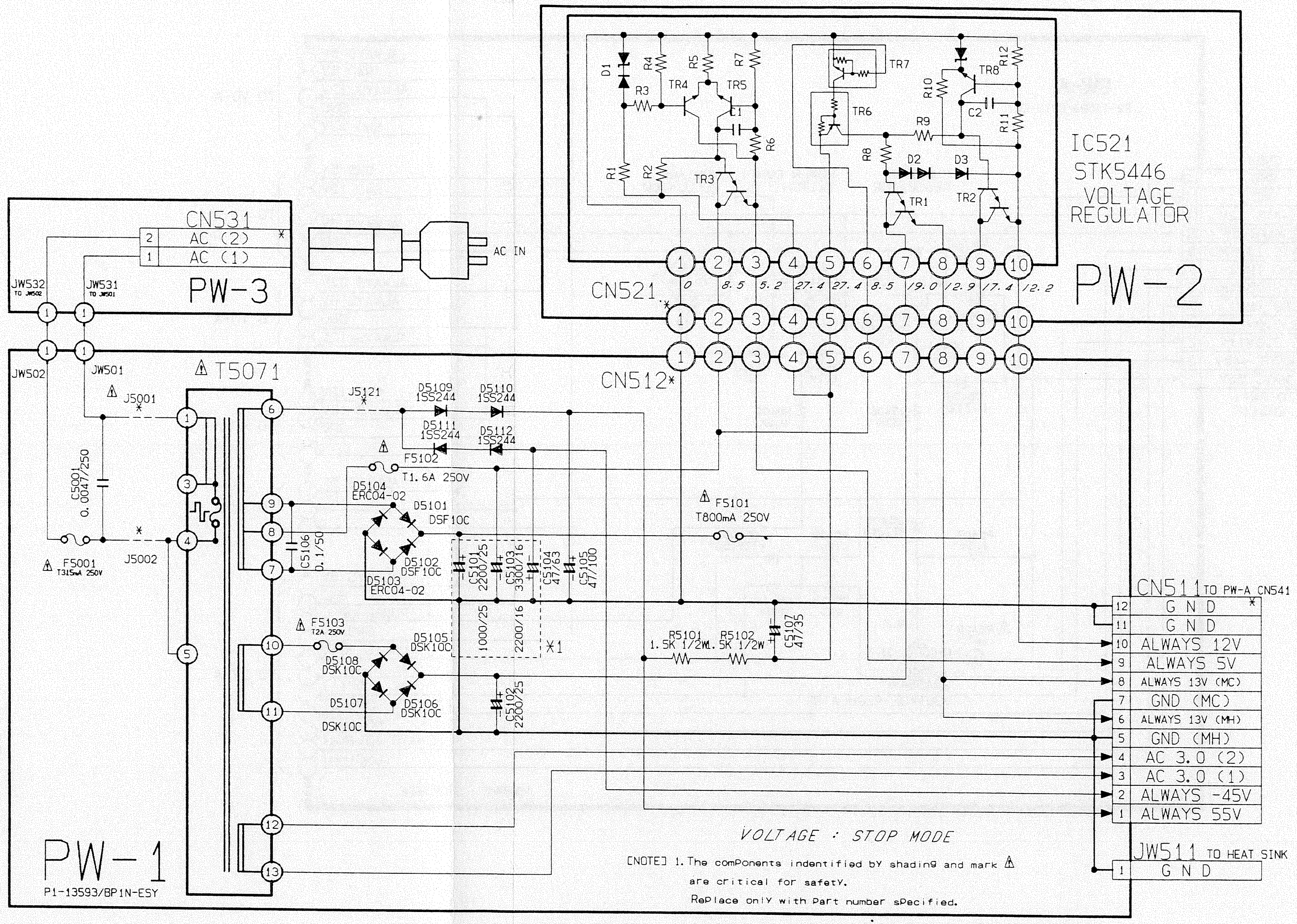
(K=1,000

μ=micro

IN THIS
WHOSE
SAFETY.
OL NEED
) IN THE
CE, WAT-

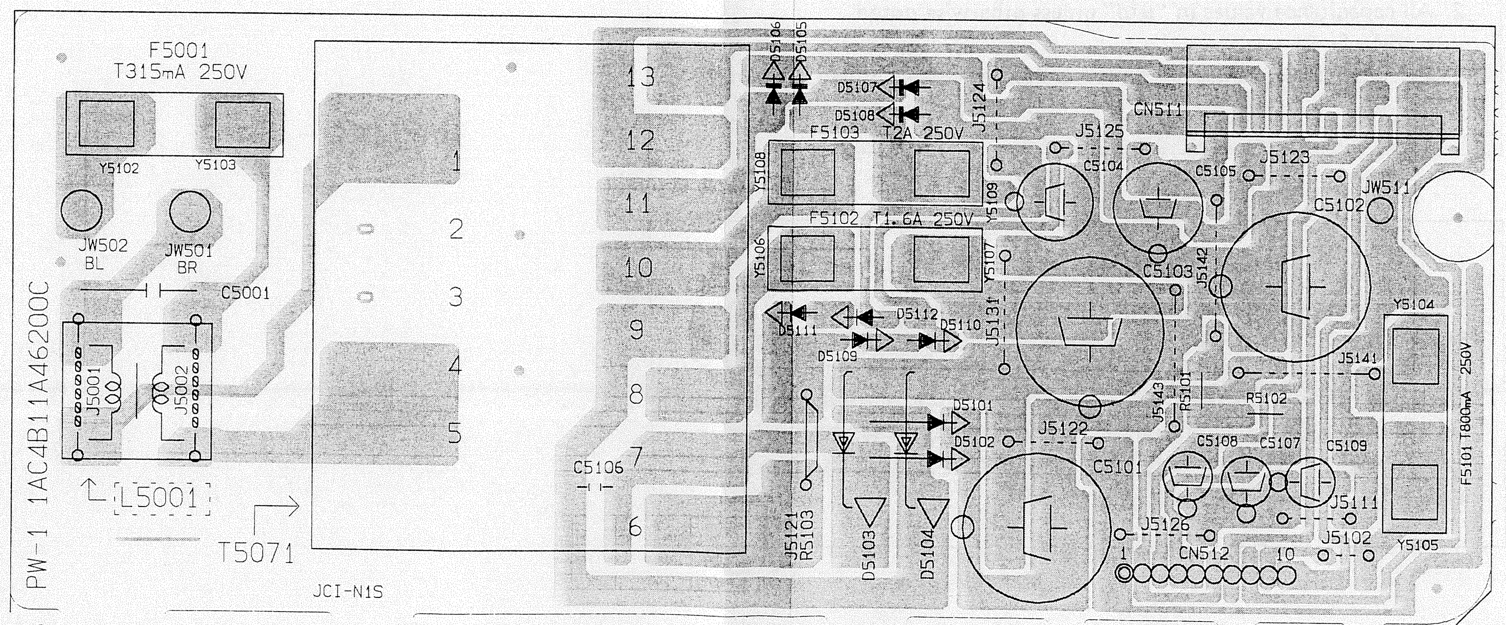
## PW-1, 2, 3 BOARD POWER SUPPLY CIRCUIT DIAGRAM (SLV-225UB, SLV-225EI ONLY)

| NOTE | | *1 | |
|---|---|---|---|
| | | C5101 | C5103 |
| | SLV-225UB | 1000/25 | 2200/16 |
| | SLV-225EI | 2200/25 | 3300/16 |

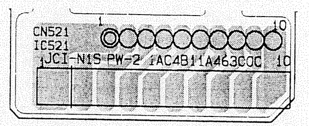

IC521
STK5446
VOLTAGE
REGULATOR
PW-2
CN521
CN512
CN531
AC (2)
AC (1)
PW-3
AC IN
JW532
JW531
JW502
JW501
T5071
J5001
J5002
F5001
T315mA 250V
C5001
0.0047/250
F5102
T1.6A 250V
F5103
T2A 250V
F5101
T800mA 250V
D5101
D5102
D5103
D5104
D5105
D5106
D5107
D5108
D5109
D5110
D5111
D5112
1SS244
DSF10C
ERC04-02
DSK10C
C5101
C5102
C5103
C5104
C5105
C5106
C5107
R5101
R5102
1.5K 1/2W
*1
CN511 TO PW-A CN541
GND
GND
ALWAYS 12V
ALWAYS 5V
ALWAYS 13V (MC)
GND (MC)
ALWAYS 13V (MH)
GND (MH)
AC 3.0 (2)
AC 3.0 (1)
ALWAYS -45V
ALWAYS 55V
JW511 TO HEAT SINK
GND
PW-1
P1-13593/BP1N-ESY
VOLTAGE : STOP MODE

[NOTE] 1. The components indentified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

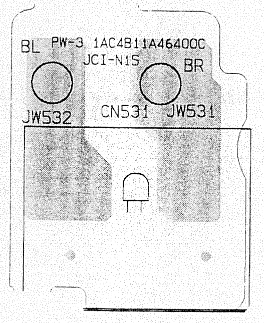
### PW-1 P. C. B.


F5001
T315mA 250V
Y5102
Y5103
JW502 BL
JW501 BR
C5001
J5001
J5002
L5001
T5071
PW-1 1AC4B11A46200C
JCI-N1S
F5103 T2A 250V
F5102 T1.6A 250V
CN511
CN512
F5101 T800mA 250V

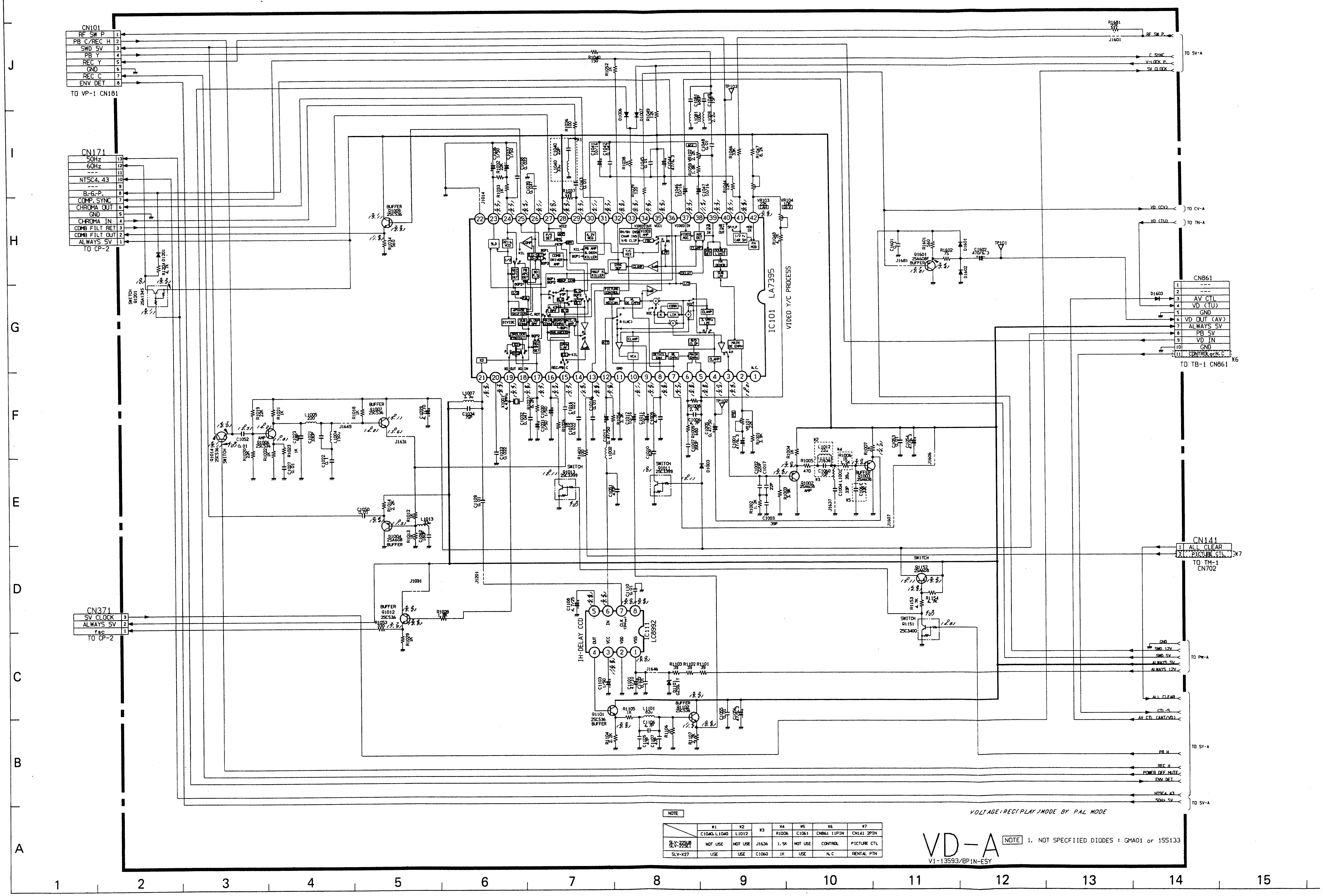
### PW-2 P. C. B.


CN521
IC521
JCI-N1S PW-2 1AC4B11A463C0C

### PW-3 P. C. B.


BL
PW-3 1AC4B11A46400C
JCI-N1S
BR
JW532
CN531
JW531

# CP-1 BOARD (VD-A) VIDEO CIRCUIT DIAGRAM


CN101
RF SW P
PB C/REC H
SWD 5V
PB Y
REC Y
GND
REC C
ENV DET
TO VP-1 CN181
CN171
50Hz
60Hz
NTSC4.43
B-G-P.
COMP. SYNC
CHROMA OUT
GND
CHROMA IN
COMB FILT RET
COMB FILT OUT
ALWAYS 5V
TO CP-2
IC101 LA7395 VIDEO Y/C PROCESS
CN861
AV CTL
VD (TU)
GND
VD OUT (AV)
ALWAYS 5V
PB 5V
VD IN
GND
CONTROL or N.C
TO TB-1 CN861
CN141
ALL CLEAR
PICTURE CTL
TO TM-1 CN702
CN371
SV CLOCK
ALWAYS 5V
fsc
TO CP-2
IH-DELAY CCD
IC111 LC8992
TO SV-A
TO CV-A
TO TN-A
TO PW-A
TO SY-A
VOLTAGE:REC(PLAY)MODE BY PAL MODE
VD-A
V1-13593/BP1N-ESY

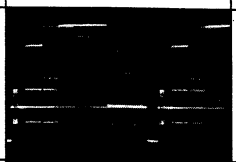
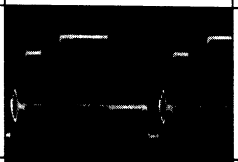
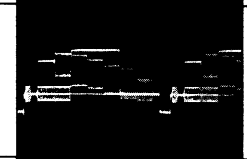
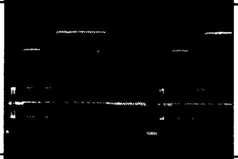
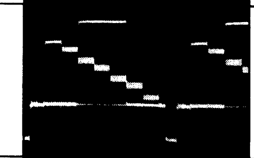
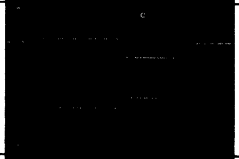
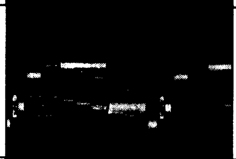
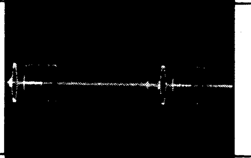
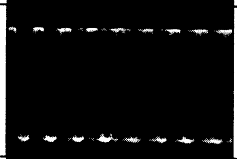
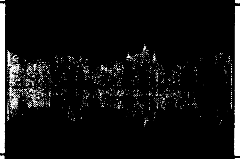
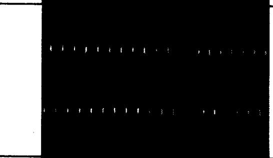
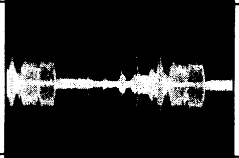
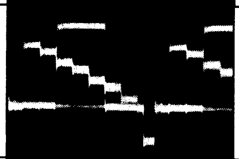
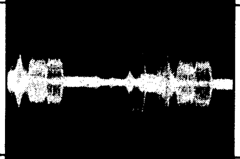
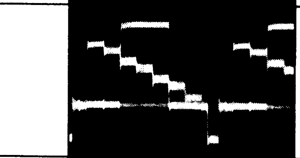
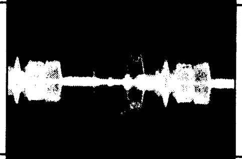
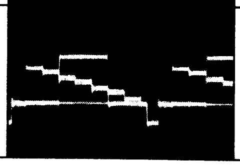
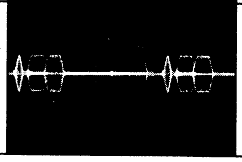
NOTE

| | ※1 | ※2 | ※3 | ※4 | ※5 | ※6 | ※7 |
|---|---|---|---|---|---|---|---|
| | C1040, L1040 | L1012 | | R1006 | C1061 | CN861 11PIN | CN141 2PIN |
| SLV-225UB<br>SLV-225EI | NOT USE | NOT USE | J1636 | 1.5K | NOT USE | CONTROL | PICTURE CTL |
| SLV-X27 | USE | USE | C1060 | 1K | USE | N.C | RENTAL PTN |

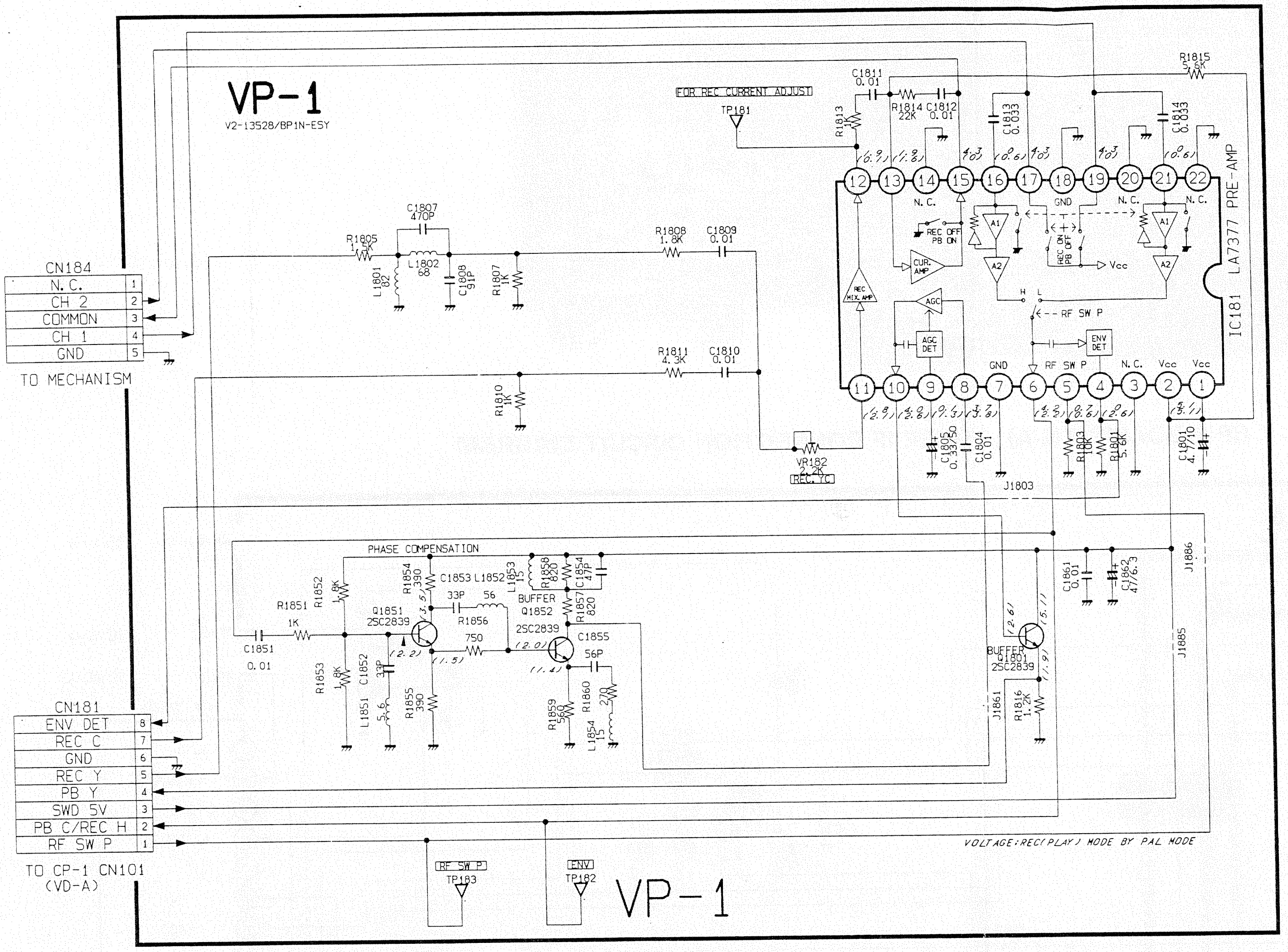
NOTE 1. NOT SPECFIIED DIODES : GMA01 or 1SS133

## WAVEFORM OF VIDEO

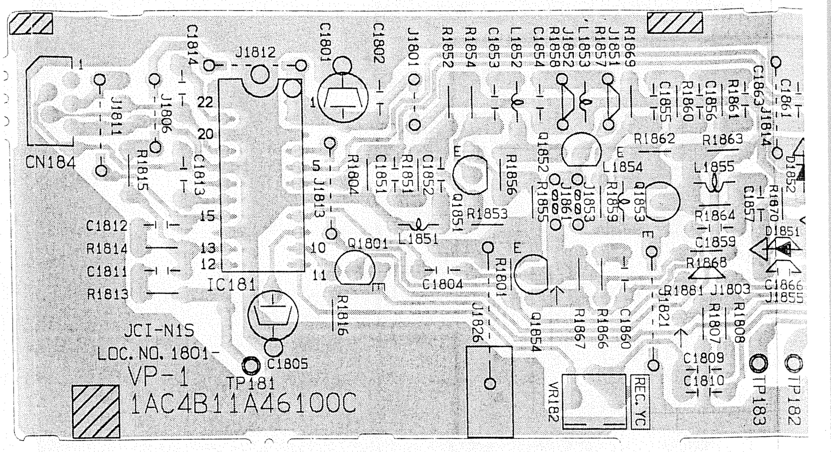
WF-V-EP

| TEST LOCATION | WAVEFORM | MODE/LEVEL | TEST LOCATION | WAVEFORM | MODE/LEVEL |
|---|---|---|---|---|---|
| IC101<br>Pin 37 |  | REC, EE<br>1 Vp-p | IC101<br>Pin 34 |  | PB<br>2.5 Vp-p |
| IC101<br>Pin 3 |  | REC, EE<br>0.6 Vp-p | IC101<br>Pin 34 |  | REC, EE<br>2 Vp-p |
| IC101<br>Pin 4 |  | REC, EE<br>0.5 Vp-p | IC101<br>(UPPER)<br>Pin 34<br>(LOWER)<br>Pin 33 |  | STILL<br>(UPPER)<br>2 Vp-p<br>(LOWER)<br>5 Vp-p |
| IC101<br>Pin 5 |  | REC, EE<br>1.2 Vp-p | IC101<br>Pin 15 |  | REC, EE<br>0.7 Vp-p |
| IC101<br>Pin 40 |  | REC, EE<br>1.0 Vp-p | Q1006<br>Base |  | PB<br>0.2 Vp-p |
| IC101<br>Pin 39 |  | PB<br>0.3 Vp-p | Q1007<br>Emitter |  | PB<br>0.25 Vp-p |
| IC101<br>Pin 3 |  | PB<br>0.5 Vp-p | IC101<br>Pin 15 |  | PB<br>0.25 Vp-p |
| IC101<br>Pin 4 |  | PB<br>0.5 Vp-p | IC101<br>Pin 25 |  | PB<br>1.0 Vp-p |
| IC101<br>Pins 10/12 |  | PB<br>0.3 Vp-p | IC101<br>Pin 31 |  | PB<br>0.6 Vp-p |

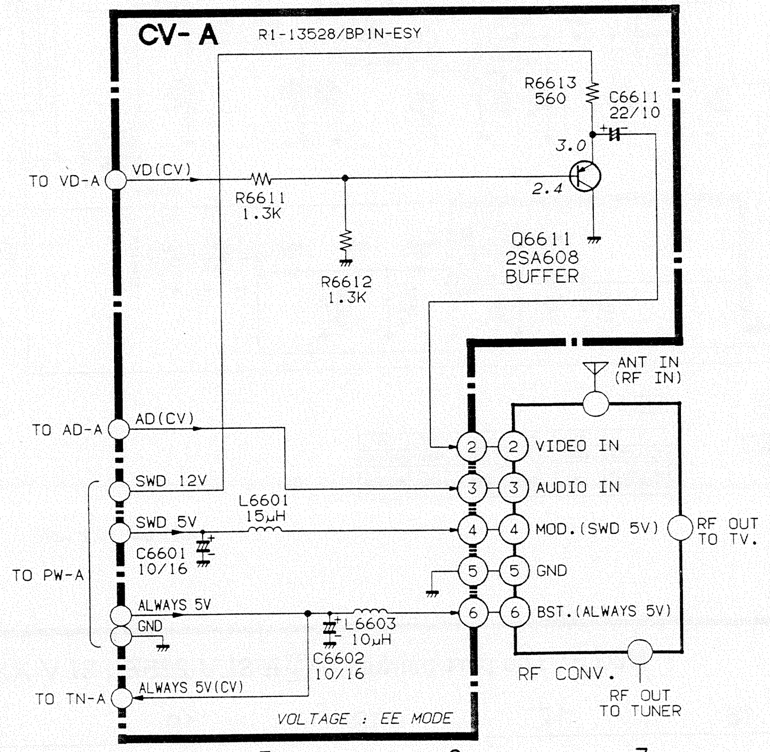
## VP-1 BOARD VIDEO PRE-AMP CIRCUIT DIAGRAM


VP-1
V2-13528/BP1N-ESY
CN184
N.C.
CH 2
COMMON
CH 1
GND
TO MECHANISM
FOR REC CURRENT ADJUST
TP181
IC181 LA7377 PRE-AMP
REC MIX AMP
CUR AMP
AGC
AGC DET
ENV DET
RF SW P
VR182
J1803
PHASE COMPENSATION
Q1851 2SC2839
Q1852 2SC2839
BUFFER
Q1801 2SC2839
J1885
J1886
J1861
CN181
ENV DET
REC C
GND
REC Y
PB Y
SWD 5V
PB C/REC H
RF SW P
TO CP-1 CN101 (VD-A)
RF SW P
TP183
ENV
TP182
VOLTAGE:(REC/PLAY) MODE BY PAL MODE
VP-1

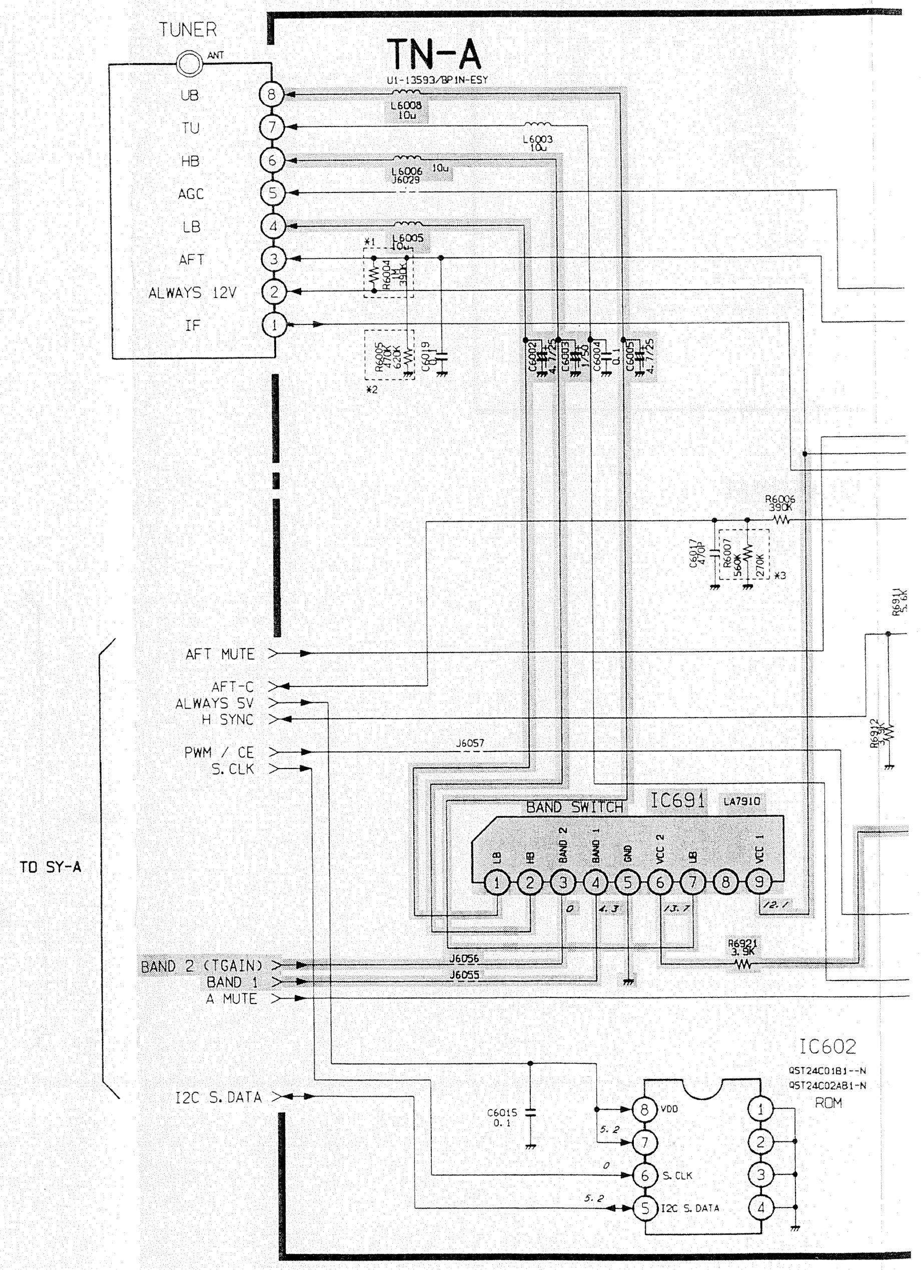
## VP-1 P. C. B.


CN184
J1812
IC181
JCI-N1S
LOC. NO. 1801-
VP-1
1AC4B11A46100C
TP181
C1805
TP183
TP182
VR182

## CP-1 BOARD (CV-A) RF CONVERTER CONNECTION CIRCUIT DIAGRAM


CV-A
R1-13528/BP1N-ESY
TO VD-A
VD(CV)
R6611 1.3K
R6612 1.3K
R6613 560
C6611 22/10
3.0
2.4
Q6611 2SA608 BUFFER
TO AD-A
AD(CV)
SWD 12V
SWD 5V
L6601 15μH
C6601 10/16
TO PW-A
ALWAYS 5V
GND
L6603 10μH
C6602 10/16
TO TN-A
ALWAYS 5V(CV)
ANT IN (RF IN)
VIDEO IN
AUDIO IN
MOD.(SWD 5V)
GND
BST.(ALWAYS 5V)
RF OUT TO TV.
RF CONV.
RF OUT TO TUNER
VOLTAGE : EE MODE

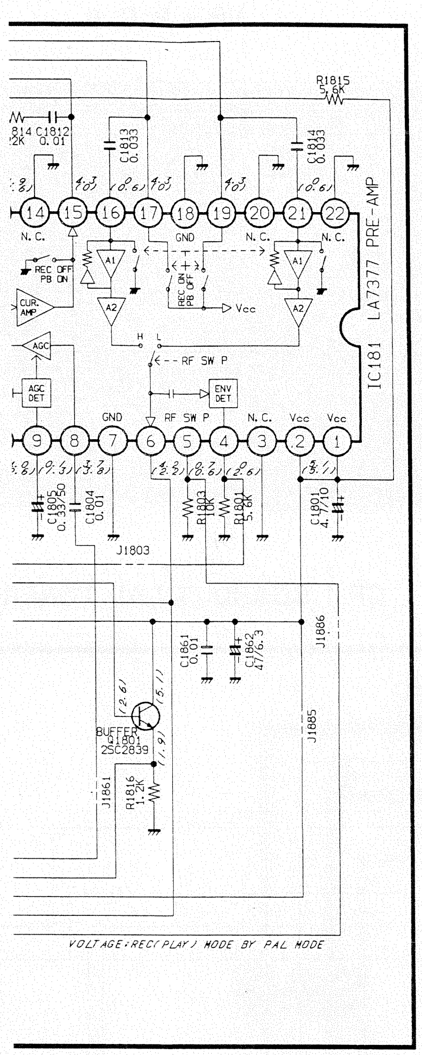
## CP-1 BOARD (TN-A) TUNER I


TUNER
ANT
TN-A
U1-13593/BP1N-ESY
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
AFT MUTE
AFT-C
ALWAYS 5V
H SYNC
PWM / CE
S.CLK
TO SY-A
BAND 2 (TGAIN)
BAND 1
A MUTE
I2C S.DATA
BAND SWITCH
IC691 LA7910
IC602
QST24C01B1--N
QST24C02AB1--N
ROM
VDD
S.CLK
I2C S.DATA

K
J
I
H
G
F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

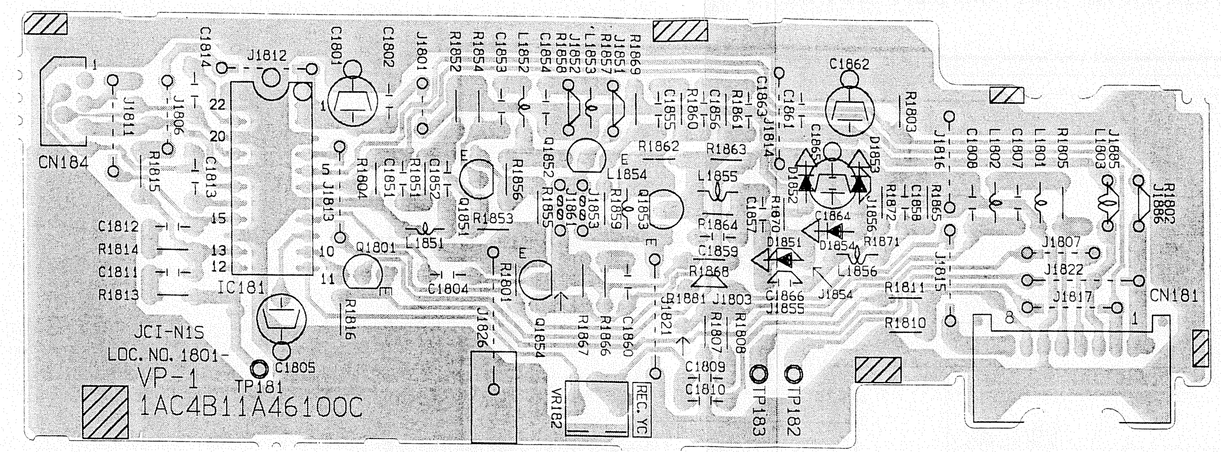
AM


R1815
LA7377 PRE-AMP
IC181
N. C.
GND
Vcc
RF SW P
AGC
AGC DET
ENV DET
J1803
C1861 0.01
C1862 47/6.3
J1886
J1885
BUFFER Q1801 2SC2839
R1816 1.2K
J1861
VOLTAGE(REC(PLAY) MODE BY PAL MODE

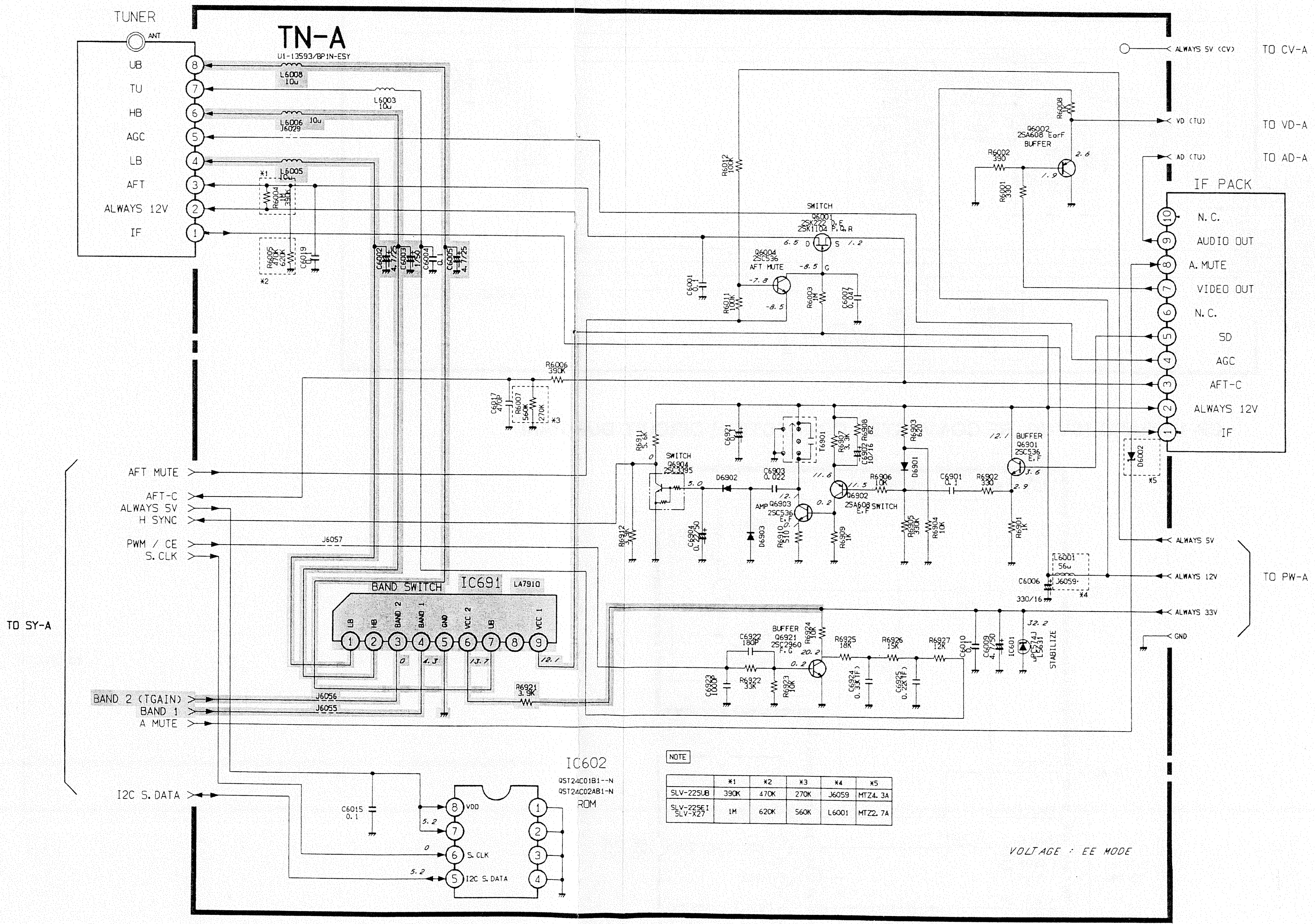
T DIAGRAM

OUT
TV.

## VP-1 P. C. B.


CN184
CN181
IC181
JCI-N1S
LOC. NO. 1801-
VP-1
1AC4B11A46100C
TP181
TP182
TP183
VR182
REC. YC
C1862
C1805

## CP-1 BOARD (TN-A) TUNER IF CONNECTION CIRCUIT DIAGRAM


TN-A
TUNER
ANT
UB
TU
HB
AGC
LB
AFT
ALWAYS 12V
IF
AFT MUTE
AFT-C
ALWAYS 5V
H SYNC
PWM / CE
S. CLK
TO SY-A
BAND 2 (TGAIN)
BAND 1
A MUTE
I2C S. DATA
BAND SWITCH
IC691
LA7910
IC602
ROM
VDD
S. CLK
I2C S. DATA
IF PACK
N. C.
AUDIO OUT
A. MUTE
VIDEO OUT
N. C.
SD
AGC
AFT-C
ALWAYS 12V
IF
ALWAYS 5V (CV)
TO CV-A
VD (TU)
TO VD-A
AD (TU)
TO AD-A
ALWAYS 5V
ALWAYS 12V
ALWAYS 33V
GND
TO PW-A
SWITCH
AFT MUTE
BUFFER
AMP
STABILIZE
VOLTAGE : EE MODE

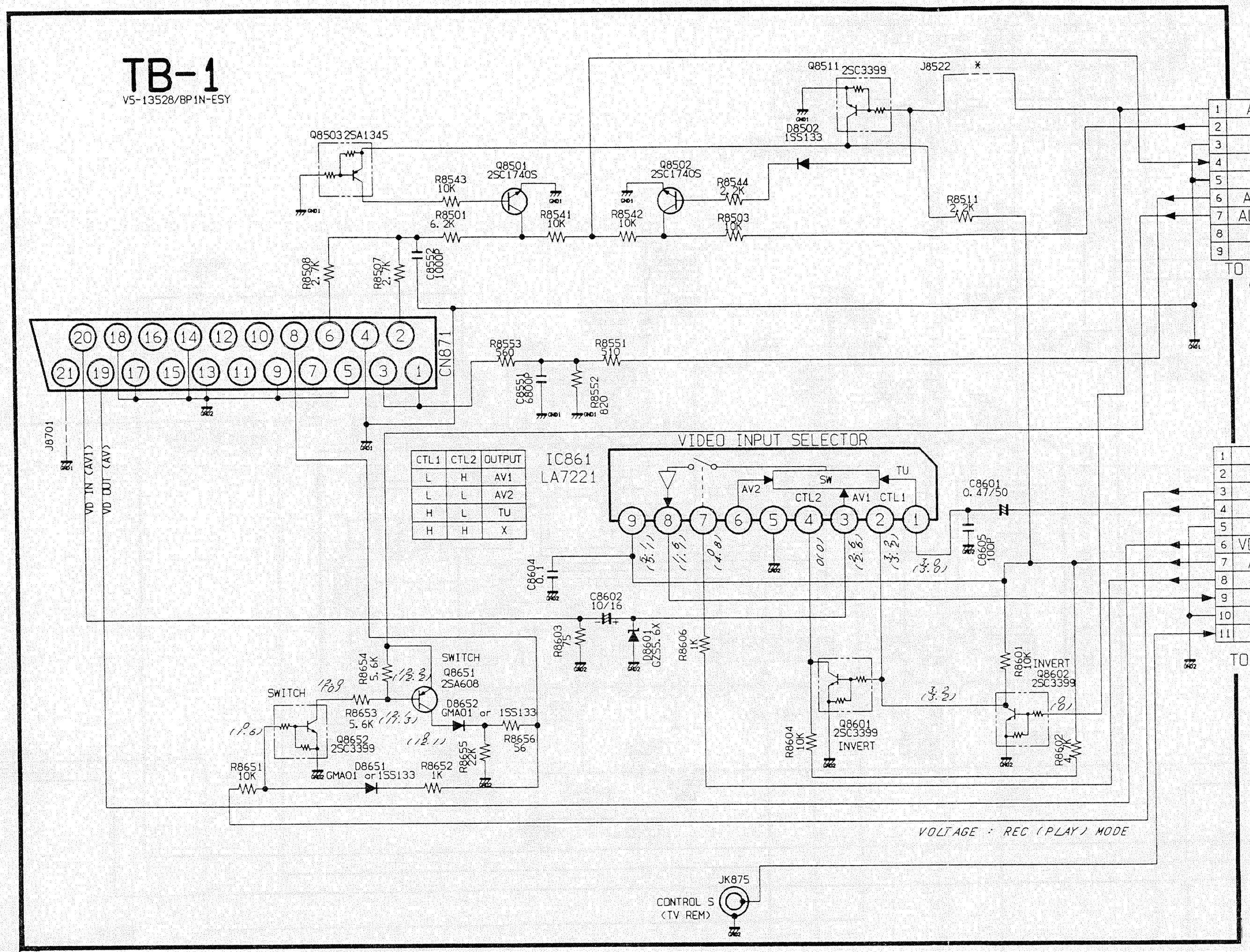
NOTE

|  | *1 | *2 | *3 | *4 | *5 |
|---|---|---|---|---|---|
| SLV-225UB | 390K | 470K | 270K | J6059 | MTZ4. 3A |
| SLV-225EI<br>SLV-X27 | 1M | 620K | 560K | L6001 | MTZ2. 7A |

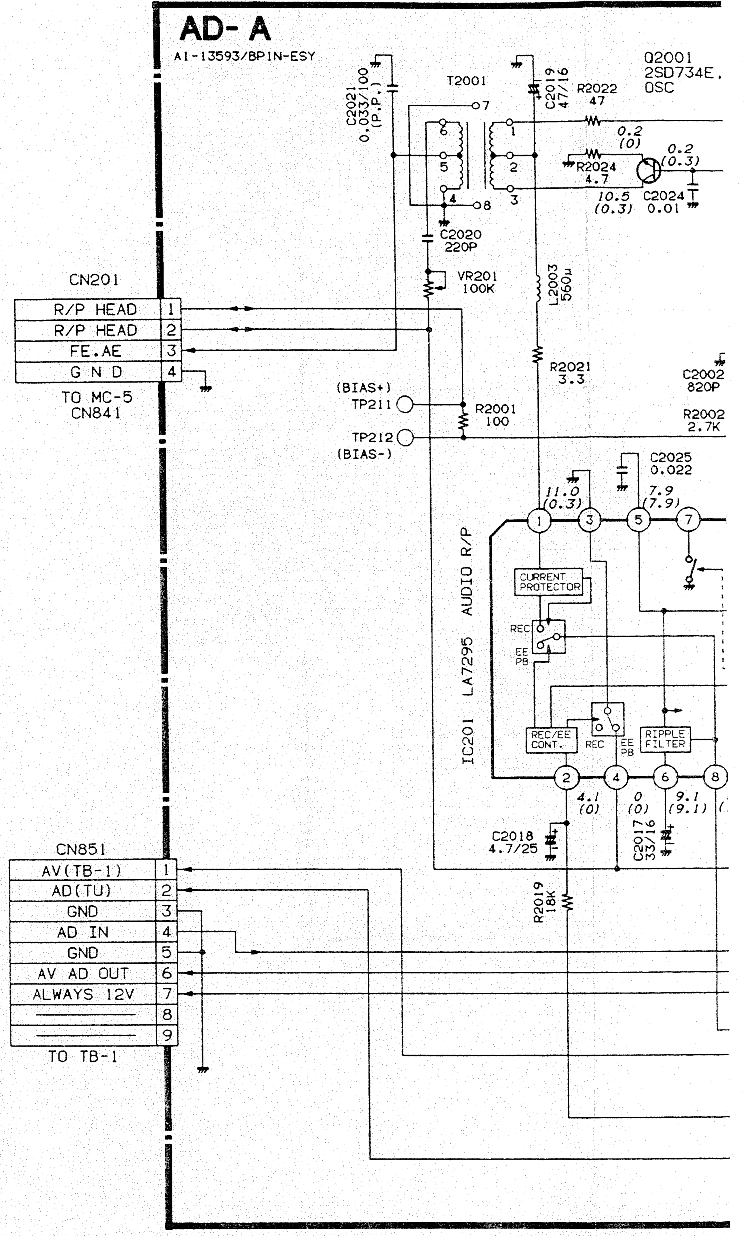
**NOTE:** The part marked ▨ is SLV-225EI, SLV-X27

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

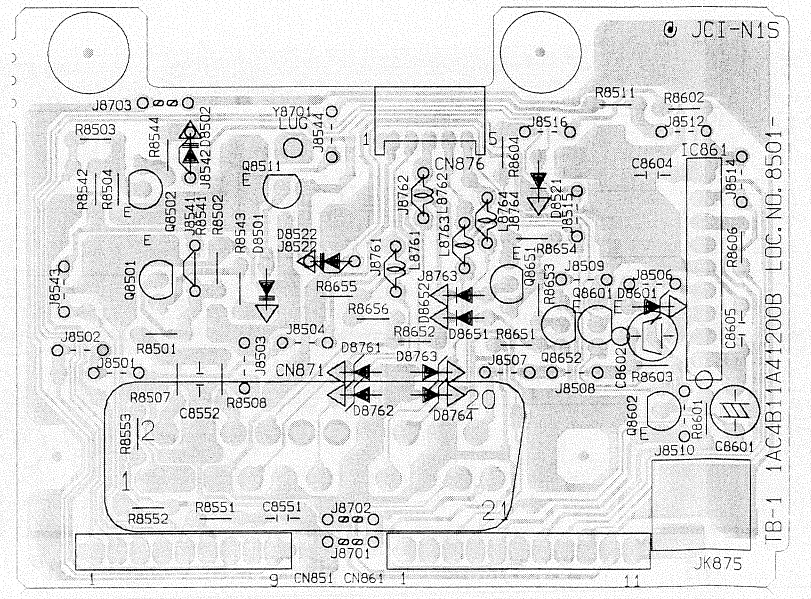
## TB-1 BOARD TERMINAL CIRCUIT DIAGRAM (SLV-225UB, SLV-225EI ONLY)

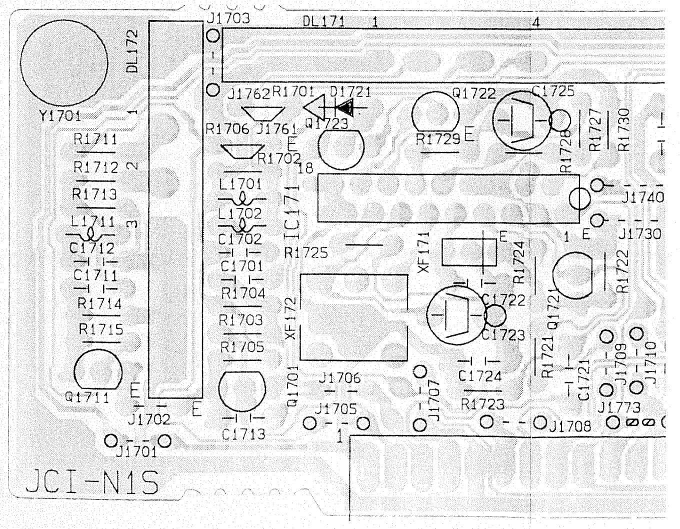

TB-1
V5-13528/BP1N-ESY
Q8503 2SA1345
Q8501 2SC1740S
Q8502 2SC1740S
Q8511 2SC3399
J8522
D8502 1SS133
R8543 10K
R8501 6.2K
R8541 10K
R8542 10K
R8544
R8503 15K
R8511
C8552 1000P
R8508
R8507
CN871
R8553 560
R8551 510
C8551
R8552 620
J8701
VD IN (AV1)
VD OUT (AV)
CN851
1 AV(TB-1)
2 AD (TU)
3 GND
4 AD IN
5 GND
6 AV AD OUT
7 ALWAYS 12V
8 NC
9 NC
TO CP-1 CN851 (AD-A)
VIDEO INPUT SELECTOR
IC861 LA7221
CTL1 CTL2 OUTPUT
L H AV1
L L AV2
H L TU
H H X
AV2 SW TU CTL2 AV1 CTL1
C8601 0.47/50
C8604 0.1
C8602 10/16
C8605 100P
R8603
D8601 GZS5.6X
R8606
CN861
1 NC
2 NC
3 AV CTL
4 VD (TU)
5 GND
6 VD OUT (AV)
7 ALWAYS 5V
8 PB 5V
9 VD IN
10 GND
11 CONTROL
TO CP-1 CN861 (VD-A)
SWITCH Q8651 2SA608
D8652 GMA01 or 1SS133
R8654 5.6K
R8653 5.6K
SWITCH Q8652 2SC3399
R8651 10K
D8651 GMA01 or 1SS133
R8652 1K
R8655
R8656 56
Q8601 2SC3399 INVERT
R8604
R8601 10K
INVERT Q8602 2SC3399
R8602
VOLTAGE : REC (PLAY) MODE
JK875
CONTROL S (TV REM)

## CP-1 BOAI

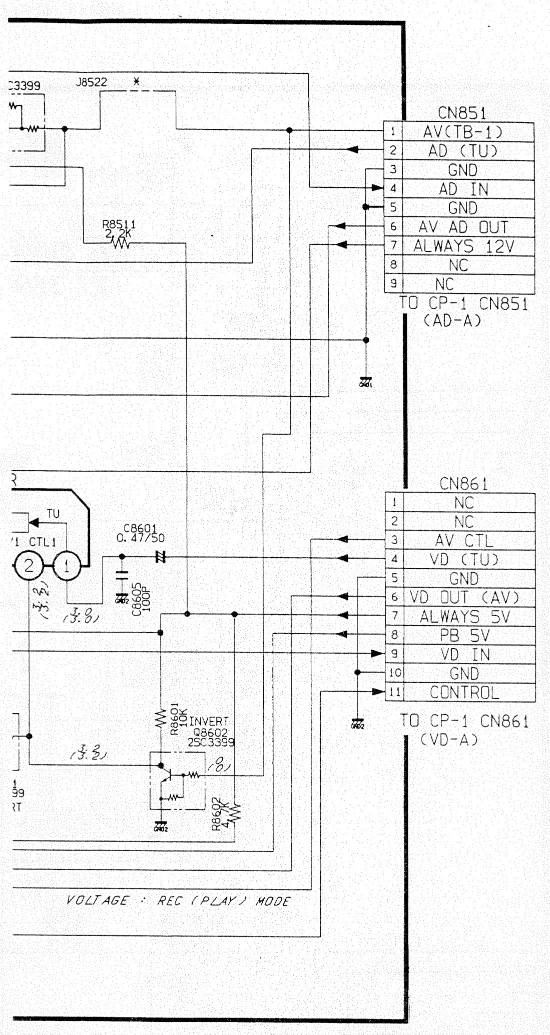

AD-A
A1-13593/BP1N-ESY
C2021 0.033/100 (P.P.)
T2001
C2019 47/16
R2022 47
Q2001 2SD734E, OSC
R2024 4.7
C2024 0.01
C2020 220P
VR201 100K
L2003 560u
CN201
1 R/P HEAD
2 R/P HEAD
3 FE.AE
4 G N D
TO MC-5 CN841
(BIAS+) TP211
TP212 (BIAS-)
R2001 100
R2021 3.3
C2002 820P
R2002 2.7K
C2025 0.022
IC201 LA7295 AUDIO R/P
CURRENT PROTECTOR
REC EE PB
REC/EE CONT.
RIPPLE FILTER
C2018 4.7/25
C2017 33/16
R2019 18K
CN851
1 AV(TB-1)
2 AD(TU)
3 GND
4 AD IN
5 GND
6 AV AD OUT
7 ALWAYS 12V
TO TB-1

## TB-1 P. C. B.


JCI-N1S
TB-1 1AC4B11A41200B LOC.NO.8501-
CN871
CN876
IC861
JK875
CN851
CN861

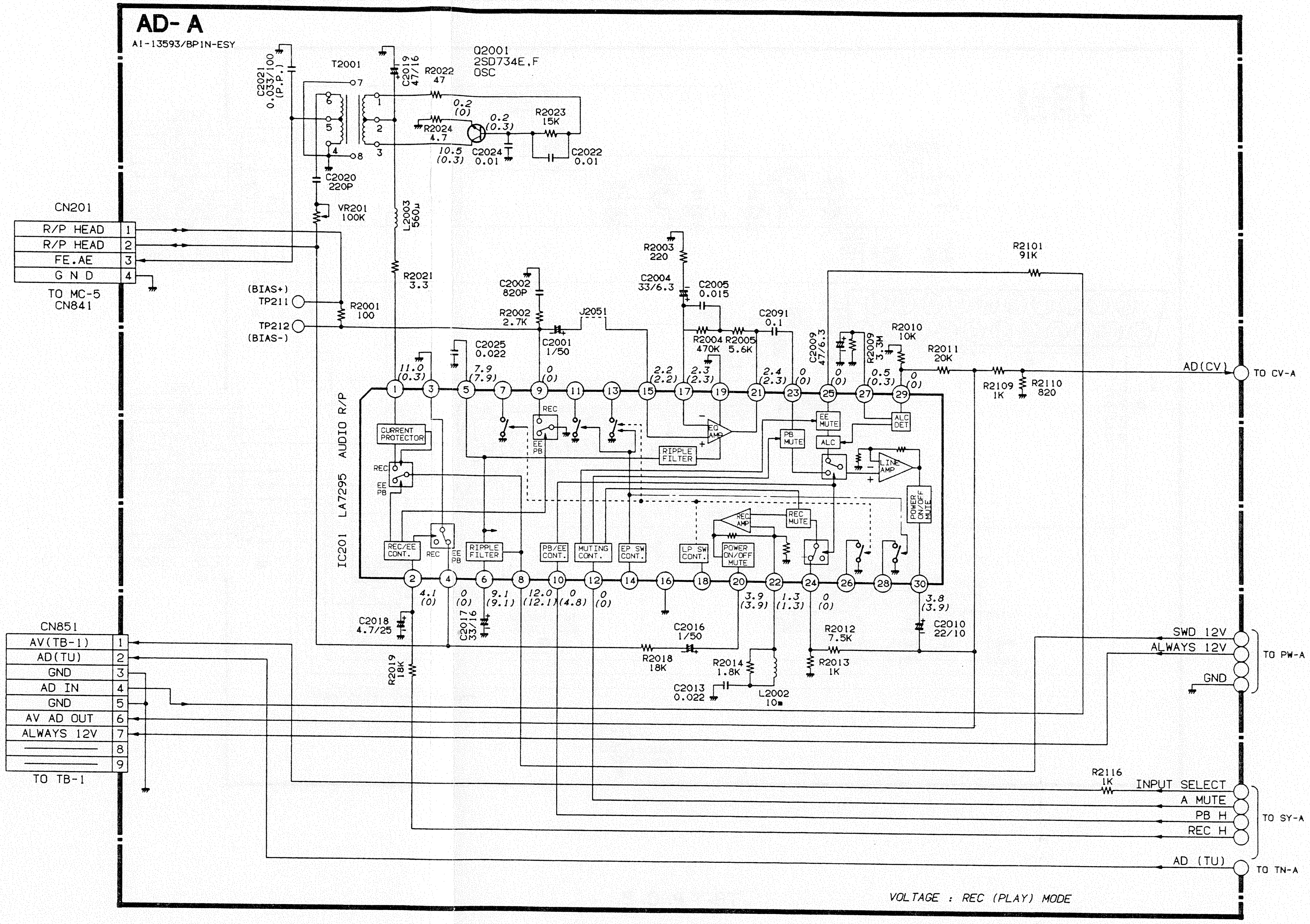

JCI-N1S
DL171
DL172
IC171
XF171
XF172
Y1701

225UB, SLV-225EI ONLY)

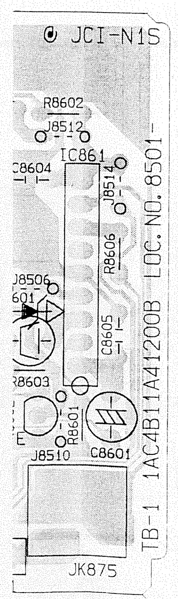


CN851
1 AV(TB-1)
2 AD (TU)
3 GND
4 AD IN
5 GND
6 AV AD OUT
7 ALWAYS 12V
8 NC
9 NC
TO CP-1 CN851 (AD-A)
CN861
1 NC
2 NC
3 AV CTL
4 VD (TU)
5 GND
6 VD OUT (AV)
7 ALWAYS 5V
8 PB 5V
9 VD IN
10 GND
11 CONTROL
TO CP-1 CN861 (VD-A)
C3399
J8522
R8511
C8601 0.47/50
Q8602 2SC3399
INVERT
VOLTAGE : REC (PLAY) MODE

## CP-1 BOARD (AD-A) AUDIO CIRCUIT DIAGRAM

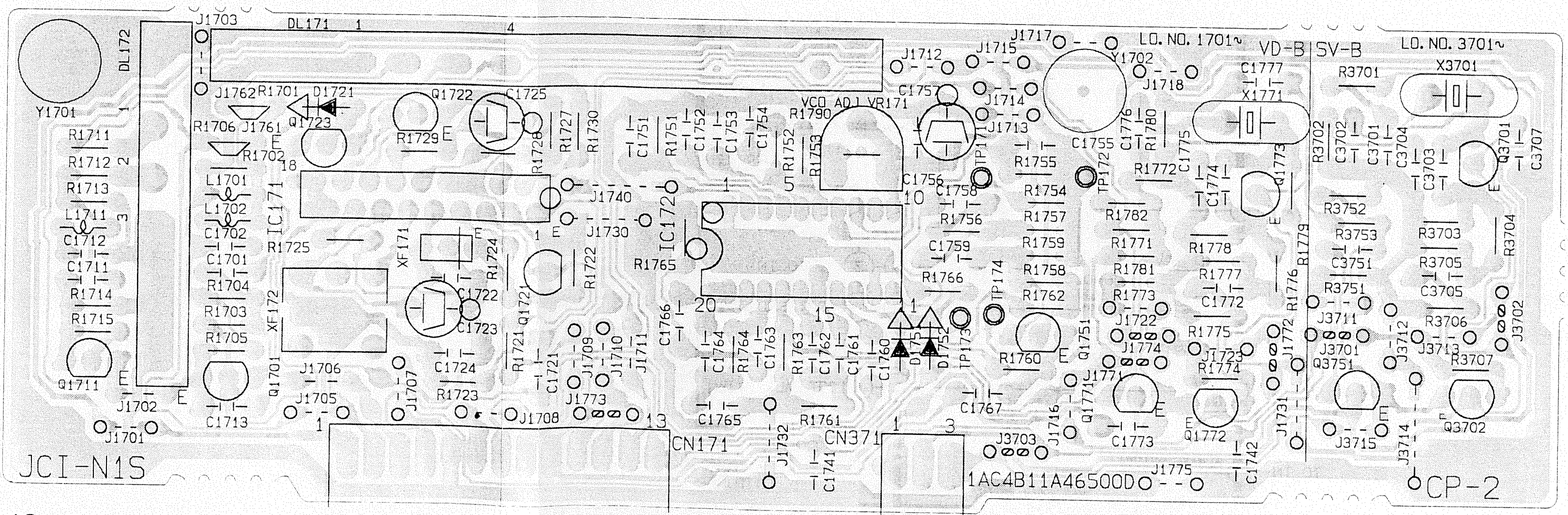


AD-A
A1-13593/BPIN-ESY
CN201
1 R/P HEAD
2 R/P HEAD
3 FE.AE
4 G N D
TO MC-5 CN841
T2001
C2021 0.033/100 (P.P.)
C2019 47/16
R2022 47
Q2001 2SD734E,F OSC
R2023 15K
R2024 4.7
C2024 0.01
C2022 0.01
C2020 220P
VR201 100K
L2003 560µ
R2021 3.3
(BIAS+) TP211
TP212 (BIAS-)
R2001 100
R2003 220
C2004 33/6.3
C2005 0.015
C2002 820P
R2002 2.7K
J2051
C2025 0.022
C2001 1/50
R2004 470K
R2005 5.6K
C2091 0.1
C2009 47/6.3
R2009 3.3M
R2010 10K
R2011 20K
R2101 91K
R2109 1K
R2110 820
AD(CV)
TO CV-A
IC201 LA7295 AUDIO R/P
CURRENT PROTECTOR
REC/EE CONT.
RIPPLE FILTER
PB/EE CONT.
MUTING CONT.
EP SW CONT.
LP SW CONT.
POWER ON/OFF MUTE
REC AMP
EE MUTE
PB MUTE
ALC
ALC DET
LINE AMP
POWER ON/OFF MUTE
C2018 4.7/25
R2019 18K
C2017 33/16
R2018 18K
C2016 1/50
R2014 1.8K
C2013 0.022
L2002 10m
R2012 7.5K
R2013 1K
C2010 22/10
CN851
1 AV(TB-1)
2 AD(TU)
3 GND
4 AD IN
5 GND
6 AV AD OUT
7 ALWAYS 12V
TO TB-1
SWD 12V
ALWAYS 12V
GND
TO PW-A
R2116 1K
INPUT SELECT
A MUTE
PB H
REC H
TO SY-A
AD (TU)
TO TN-A
VOLTAGE : REC (PLAY) MODE



JCI-N1S
R8602
J8512
IC861
C8604
J8514
R8606
C8605
J8506
R8603
R8601
C8601
J8510
TB-1 1AC4B11A41200B LOC.NO.8501-
JK875

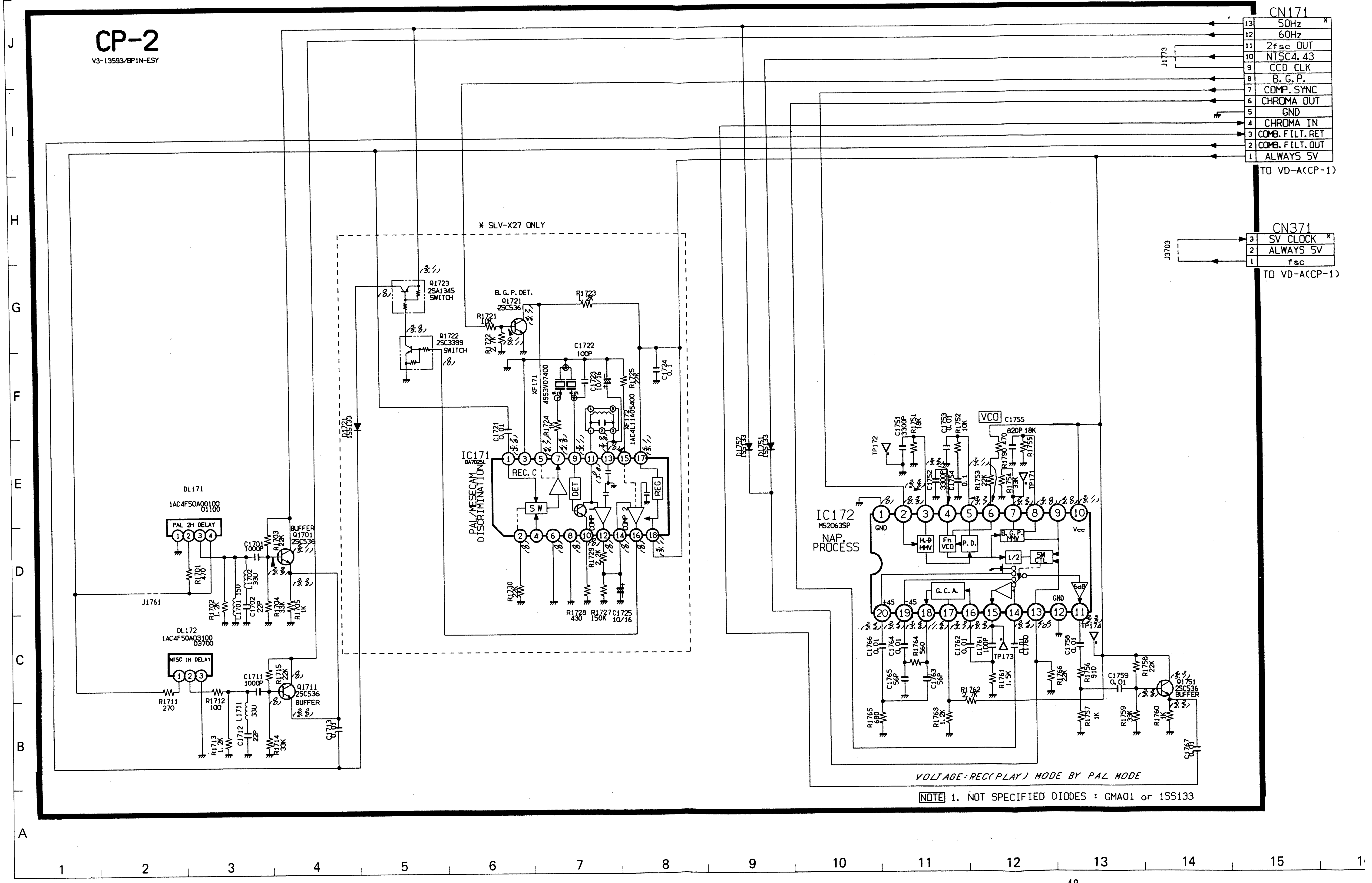
## CP-2 P. C. B.



JCI-N1S
DL172
DL171
Y1701
IC171
IC172
XF171
XF172
X3701
VCO ADJ VR171
LO. NO. 1701~
LO. NO. 3701~
VD-B
SV-B
CN171
CN371
1AC4B11A46500D
CP-2

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## CP-2 BOARD (VD-B, SV-B) PAL/MESECAM DISCRIMINATION & NAP PROCESS CIRCUIT DIAGRAM

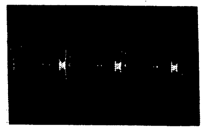
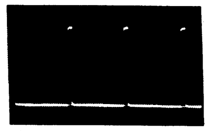
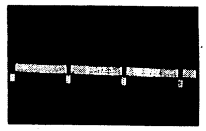
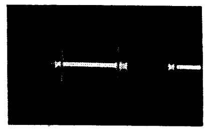
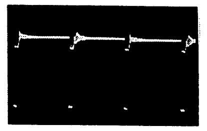
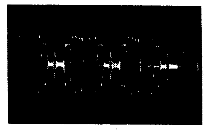
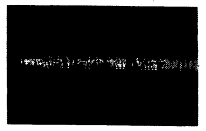
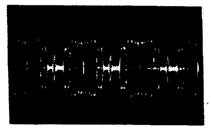
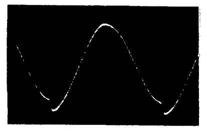
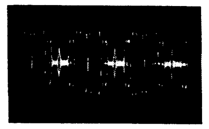
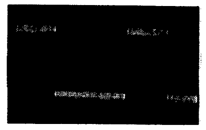

CP-2
V3-13593/BP1N-ESY
CN171
13 50Hz
12 60Hz
11 2fsc OUT
10 NTSC4.43
9 CCD CLK
8 B.G.P.
7 COMP.SYNC
6 CHROMA OUT
5 GND
4 CHROMA IN
3 COMB.FILT.RET
2 COMB.FILT.OUT
1 ALWAYS 5V
TO VD-A(CP-1)
J1773
CN371
3 SV CLOCK
2 ALWAYS 5V
1 fsc
TO VD-A(CP-1)
J3703
* SLV-X27 ONLY
Q1723 2SA1345 SWITCH
Q1722 2SC3399 SWITCH
B.G.P. DET. Q1721 2SC536
R1721 10K
R1722 2.7K
R1723 1K
C1722 100P
C1723 10/16
C1724 0.1
R1725 22K
XF171 4953V07400
XF172 1AC4L11A05400
R1724 1K
C1721 0.01
IC171 BA7025L
PAL/MESECAM DISCRIMINATION
REC. C
SW
DET
COMP
COMP 2
REG
R1730 22K
R1728 430
R1727 150K
C1725 10/16
R1729 2.2K
D1721 1SS133
D1752 1SS133
D1751 1SS133
DL171 1AC4F50A00100 01100
PAL 2H DELAY
BUFFER Q1701 2SC536
R1703 22K
C1701 1000P
R1701 470
R1702 1.2K
L1701 15U
C1702 22P
L1702 33U
R1704 33K
R1705 1K
J1761
DL172 1AC4F50A03100 03700
NTSC 1H DELAY
R1711 270
R1712 100
C1711 1000P
L1711 33U
R1715 22K
Q1711 2SC536 BUFFER
R1713 1.2K
C1712 22P
R1714 33K
C1713 0.01
IC172 M52063SP
NAP PROCESS
GND
Vcc
H.D MMV
Fh VCO
P.D.
B.G.P. MMV
1/2
SW CTL
G.C.A.
-6dB
VCO C1755
820P 18K
TP172
C1751 330P
R1751 18K
C1753 0.01
R1752 10K
C1752 3300P
C1754 0.1
R1753 22K
R1790 470
R1754 33K
R1755 15K
TP171
C1766 0.01
C1764 0.01
R1764 560
C1765 56P
C1763 56P
C1762 0.01
C1761 100P
TP173
C1760 1
R1761 1.5K
R1762 2.2K
R1763 1.2K
R1765 680
R1766 22K
C1758 0.01
R1756 910
R1757 1K
TP174
C1759 0.01
R1758 22K
R1759 33K
R1760 1K
Q1751 2SC536 BUFFER
C1767 0.01
+45
-45
K J I H G F E D C B A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

*VOLTAGE: REC(PLAY) MODE BY PAL MODE*

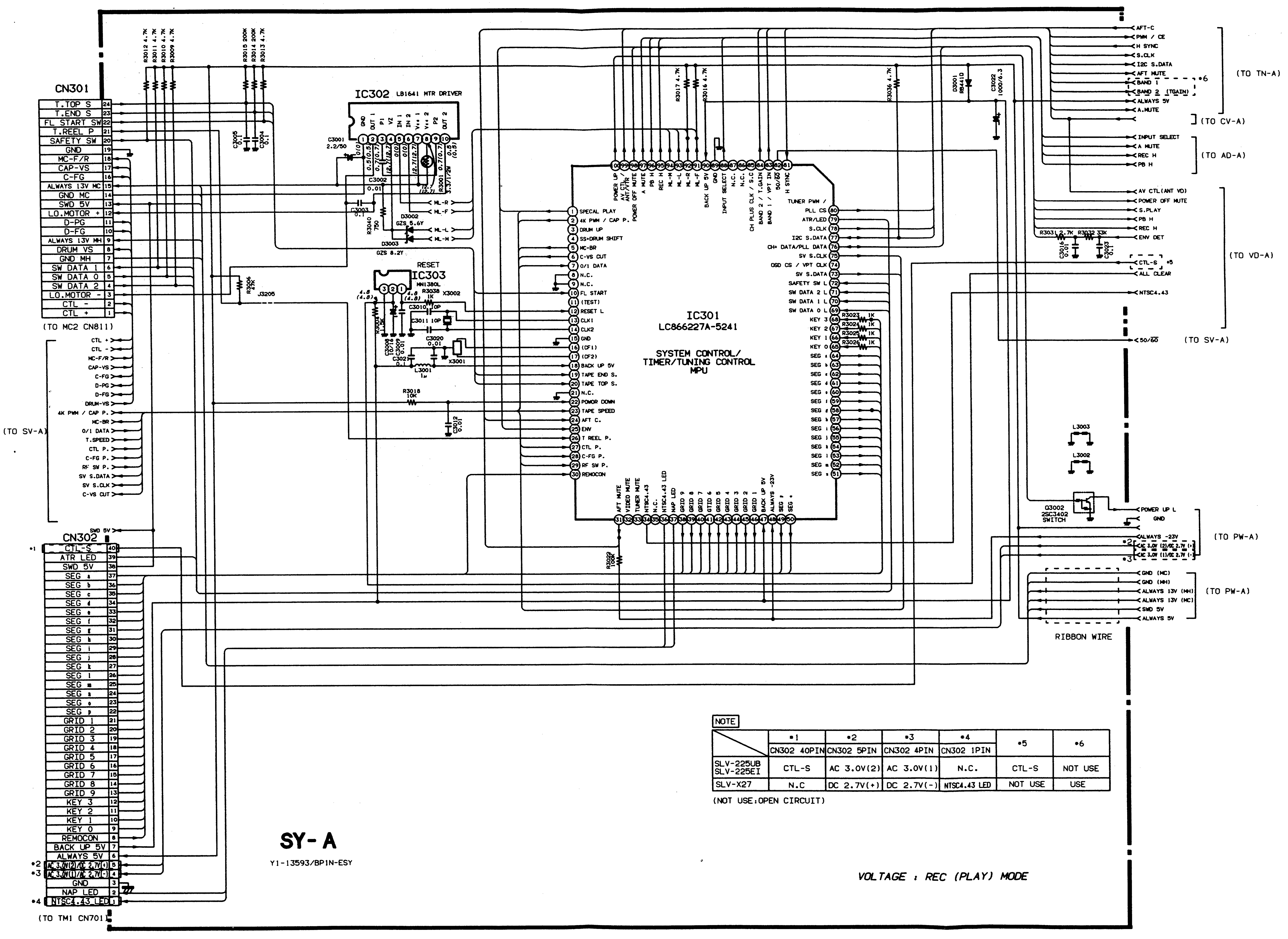
NOTE 1. NOT SPECIFIED DIODES : GMA01 or 1SS133

## WAVEFORM OF PAL/MESECAM DISCRIMINATION & NAP CIRCUIT

WF-V2-EP

| REC/PB MODE by MESECAM (Video Signal) | | | PLAY BACK MODE by NTSC PRE RECORDED TAPE | | |
|---|---|---|---|---|---|
| TEST LOCATION | WAVEFORM | LEVEL | TEST LOCATION | WAVEFORM | LEVEL |
| IC171<br>Pin 1 |  | 1 Vp-p | IC172<br>Pin 2 |  | 4.3 Vp-p |
| IC171<br>Pin 5 |  | 20m Vp-p | IC172<br>Pin 11 |  | 4.2 Vp-p |
| IC171<br>Pin 7 |  | 2.5 Vp-p | IC172<br>Pin 14 |  | 0.7 Vp-p |
| IC171<br>Pin 9 |  | 180m Vp-p | IC172<br>Pin 15 |  | 0.7 Vp-p |
| IC171<br>Pin 11 |  | 5 Vp-p | IC172<br>Pin 18 |  | 0.7 Vp-p |
| IC171<br>Pin 12 |  | 200m Vp-p | | | |

# CP-1 BOARD (SY-A) SYSTEM CONTROL CIRCUIT DIAGRAM


CN301
T.TOP S
T.END S
FL START SW
T.REEL P
SAFETY SW
GND
MC-F/R
CAP-VS
C-FG
ALWAYS 13V MC
GND MC
SWD 5V
LO.MOTOR +
D-PG
D-FG
ALWAYS 13V MH
DRUM VS
GND MH
SW DATA 1
SW DATA 0
SW DATA 2
LO.MOTOR -
CTL -
CTL +
(TO MC2 CN811)
(TO SV-A)
IC302 LB1641 MTR DRIVER
IC303 MN1380L
RESET
IC301
LC866227A-5241
SYSTEM CONTROL/
TIMER/TUNING CONTROL
MPU
CN302
CTL-S
ATR LED
SWD 5V
SEG a
GRID 1
KEY 3
KEY 2
KEY 1
KEY 0
REMOCON
BACK UP 5V
ALWAYS 5V
AC 3.0V(2)/DC 2.7V(+)
AC 3.0V(1)/DC 2.7V(-)
GND
NAP LED
NTSC4.43 LED
(TO TM1 CN701)
(TO TN-A)
(TO CV-A)
(TO AD-A)
(TO VD-A)
(TO SV-A)
(TO PW-A)
(TO PW-A)
Q3002
2SC3402
SWITCH
L3003
L3002
RIBBON WIRE
X3001
X3002
L3001
D3001
D3002
GZS 5.6Y
D3003
GZS 8.2Y

**SY- A**

Y1-13593/BP1N-ESY

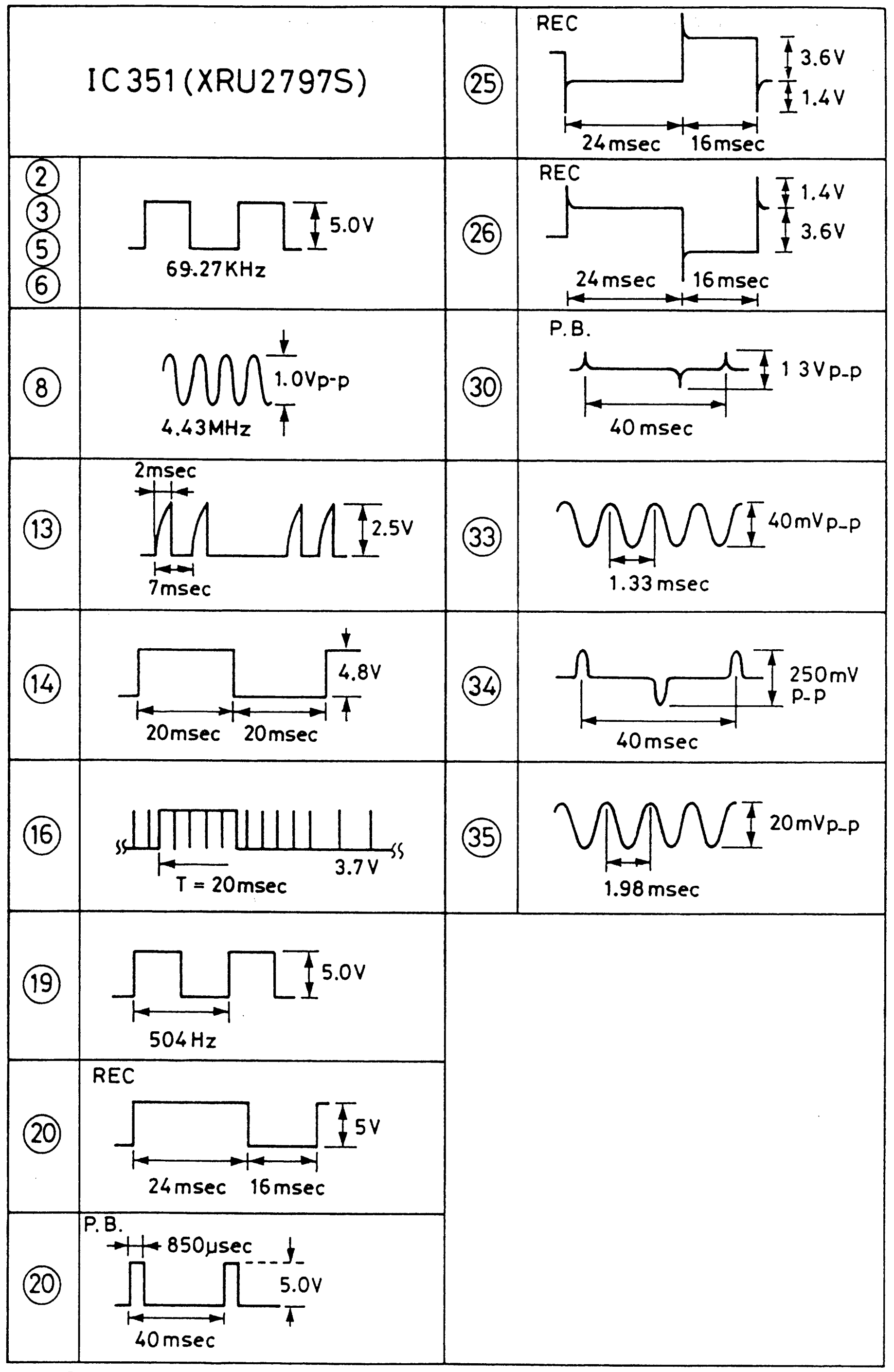
*VOLTAGE : REC (PLAY) MODE*

NOTE

|  | ∗1 | ∗2 | ∗3 | ∗4 | ∗5 | ∗6 |
|---|---|---|---|---|---|---|
|  | CN302 40PIN | CN302 5PIN | CN302 4PIN | CN302 1PIN |  |  |
| SLV-225UB<br>SLV-225EI | CTL-S | AC 3.0V(2) | AC 3.0V(1) | N.C. | CTL-S | NOT USE |
| SLV-X27 | N.C | DC 2.7V(+) | DC 2.7V(-) | NTSC4.43 LED | NOT USE | USE |

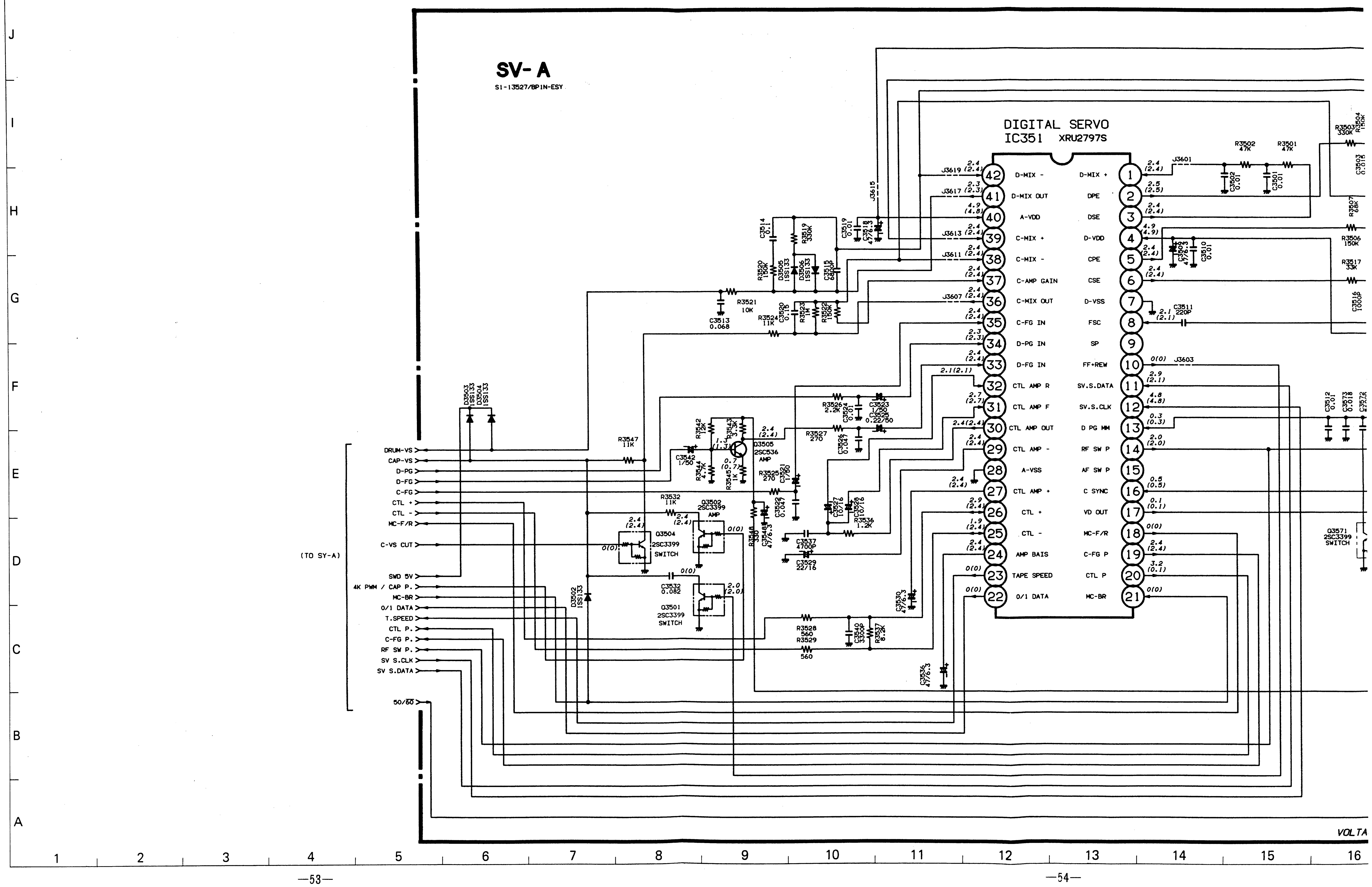
(NOT USE:OPEN CIRCUIT)

## WAVEFORM OF SERVO

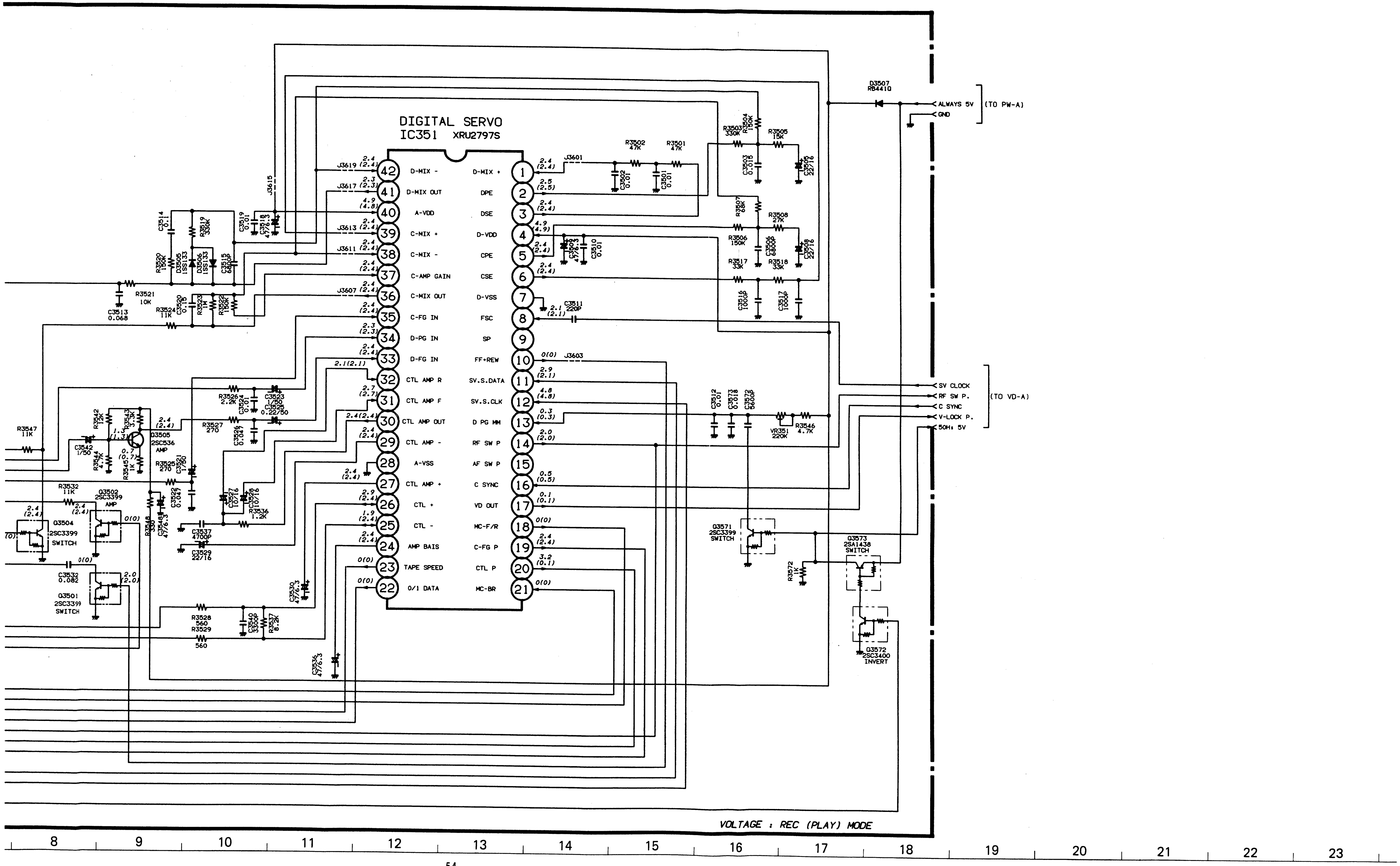

IC351(XRU2797S)
②
③
⑤
⑥
5.0V
69.27KHz
⑧
1.0Vp-p
4.43MHz
⑬
2msec
2.5V
7msec
⑭
4.8V
20msec
20msec
⑯
3.7V
T = 20msec
⑲
5.0V
504Hz
⑳
REC
5V
24msec
16msec
⑳
P.B.
850μsec
5.0V
40msec
㉕
REC
3.6V
1.4V
24msec
16msec
㉖
REC
1.4V
3.6V
24msec
16msec
㉚
P.B.
1 3Vp-p
40msec
㉝
40mVp-p
1.33msec
㉞
250mV p-p
40msec
㉟
20mVp-p
1.98msec

WF-S-SP1

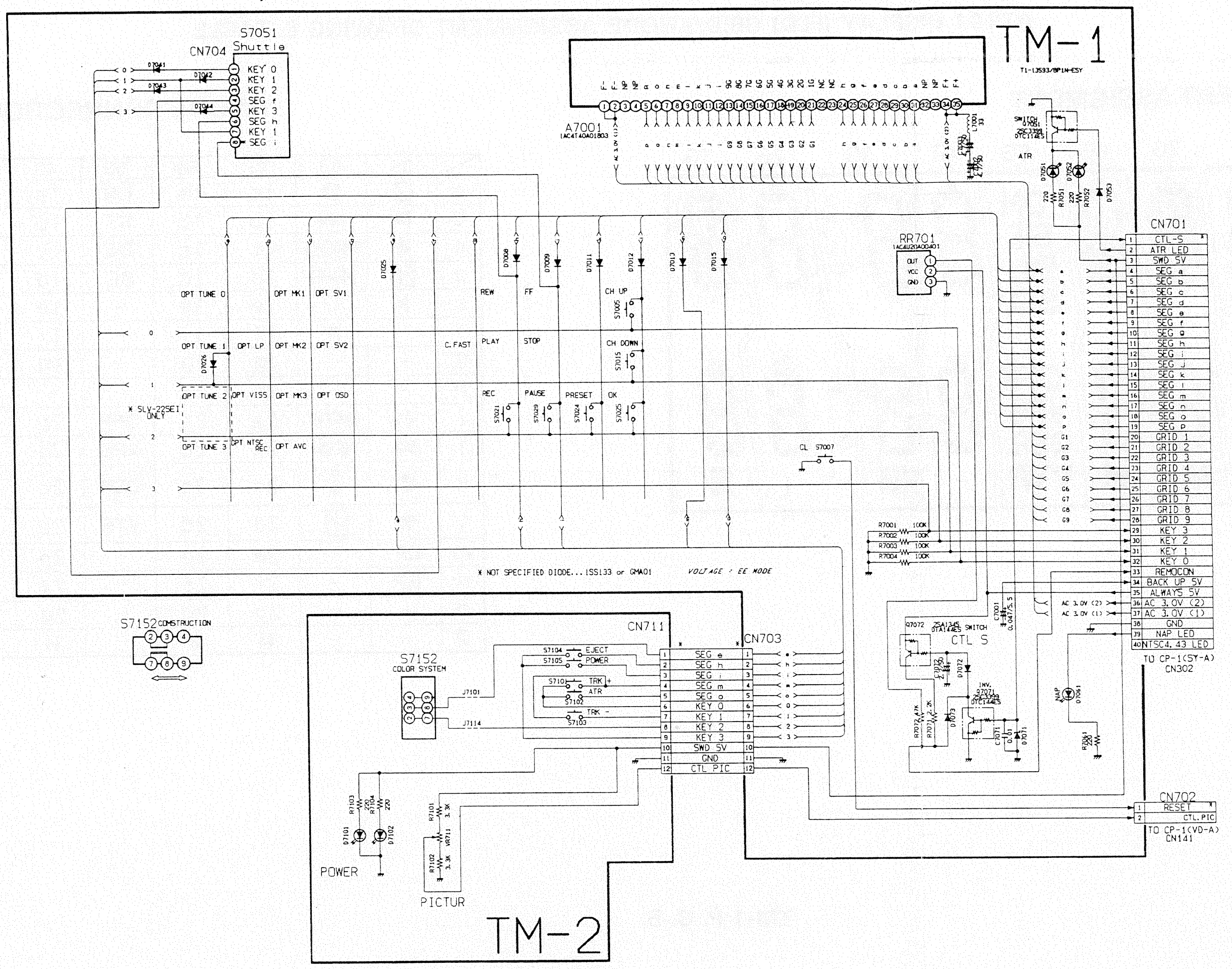
# CP-1 BOARD (SV-A) SERVO CIRCUIT DIAGRAM


SV-A
S1-13527/8PIN-ESY
DIGITAL SERVO
IC351 XRU2797S
1 D-MIX +
2 DPE
3 DSE
4 D-VDD
5 CPE
6 CSE
7 D-VSS
8 FSC
9 SP
10 FF+REW
11 SV.S.DATA
12 SV.S.CLK
13 D PG MM
14 RF SW P
15 AF SW P
16 C SYNC
17 VD OUT
18 MC-F/R
19 C-FG P
20 CTL P
21 MC-BR
22 0/1 DATA
23 TAPE SPEED
24 AMP BAIS
25 CTL -
26 CTL +
27 CTL AMP +
28 A-VSS
29 CTL AMP -
30 CTL AMP OUT
31 CTL AMP F
32 CTL AMP R
33 D-FG IN
34 D-PG IN
35 C-FG IN
36 C-MIX OUT
37 C-AMP GAIN
38 C-MIX -
39 C-MIX +
40 A-VDD
41 D-MIX OUT
42 D-MIX -
DRUM-VS
CAP-VS
D-PG
D-FG
C-FG
CTL +
CTL -
MC-F/R
C-VS CUT
SWD 5V
4K PWM / CAP P.
MC-BR
0/1 DATA
T.SPEED
CTL P.
C-FG P.
RF SW P.
SV S.CLK
SV S.DATA
50/60
(TO SY-A)
Q3505 2SC536 AMP
Q3504 2SC3399 SWITCH
Q3502 2SC3399 AMP
Q3501 2SC3399 SWITCH
Q3571 2SC3399 SWITCH
D3503 1SS133
D3504 1SS133
D3502 1SS133
D3505 1SS133
D3506 1SS133
J3619
J3617
J3615
J3613
J3611
J3607
J3601
J3603
R3501 47K
R3502 47K
R3503 330K
R3504 150K
R3506 150K
R3507 68K
R3517 33K
R3519 330K
R3520 150K
R3521 10K
R3522 150K
R3523 1M
R3524 11K
R3525 270
R3526 2.2K
R3527 270
R3528 560
R3529 560
R3532 11K
R3536 1.2K
R3537 8.2K
R3542 12K
R3543 3.3K
R3544 4.7K
R3545 1K
R3547 11K
R3548 330
C3501 0.01
C3502 0.01
C3503 0.015
C3509 47/6.3
C3510 0.01
C3511 220P
C3512 0.01
C3513 0.068
C3514 0.1
C3515 680P
C3516 1000P
C3518 47/6.3
C3519 0.01
C3520 0.15
C3521 1/50
C3522 0.047
C3523 1/50
C3524 0.01
C3525 0.22/50
C3526 0.047
C3527 10/16
C3528 10/16
C3529 22/16
C3530 47/6.3
C3532 0.082
C3536 47/6.3
C3537 4700P
C3540 3300P
C3542 1/50
C3548 47/6.3
C3572
C3573 0.018
VOLTA
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

## CP-1 BOARD (SV-A) SERVO CIRCUIT DIAGRAM

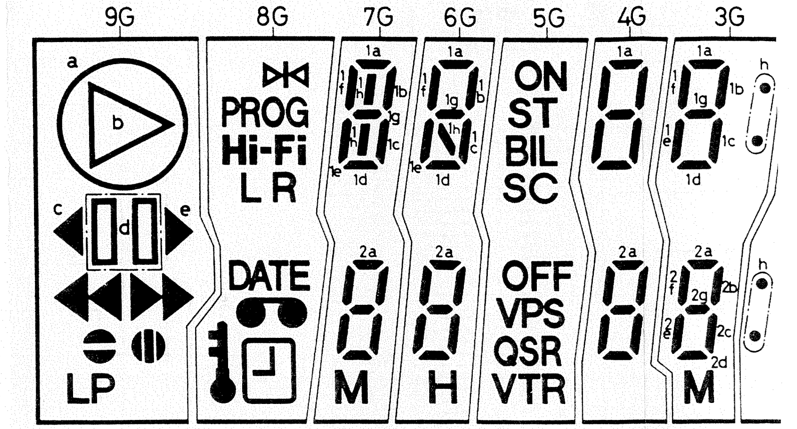

DIGITAL SERVO
IC351 XRU2797S
42 D-MIX -
41 D-MIX OUT
40 A-VDD
39 C-MIX +
38 C-MIX -
37 C-AMP GAIN
36 C-MIX OUT
35 C-FG IN
34 D-PG IN
33 D-FG IN
32 CTL AMP R
31 CTL AMP F
30 CTL AMP OUT
29 CTL AMP -
28 A-VSS
27 CTL AMP +
26 CTL +
25 CTL -
24 AMP BAIS
23 TAPE SPEED
22 0/1 DATA
1 D-MIX +
2 DPE
3 DSE
4 D-VDD
5 CPE
6 CSE
7 D-VSS
8 FSC
9 SP
10 FF+REW
11 SV.S.DATA
12 SV.S.CLK
13 D PG MM
14 RF SW P
15 AF SW P
16 C SYNC
17 VD OUT
18 MC-F/R
19 C-FG P
20 CTL P
21 MC-BR
D3507 RB441Q
ALWAYS 5V
GND
(TO PW-A)
SV CLOCK
RF SW P.
C SYNC
V-LOCK P.
50Hz 5V
(TO VD-A)
Q3571 2SC3399 SWITCH
Q3573 2SA1438 SWITCH
Q3572 2SC3400 INVERT
Q3505 2SC536 AMP
Q3502 2SC3399 AMP
Q3504 2SC3399 SWITCH
Q3501 2SC3399 SWITCH
VR351 220K
R3546 4.7K
R3572 1K
VOLTAGE : REC (PLAY) MODE
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

## TM-1, 2 BOARD OPERATION KEY & DISPLAY (FLD) CIRCUIT DIAGRAM (SLV-225UB, SLV-225EI ONLY)

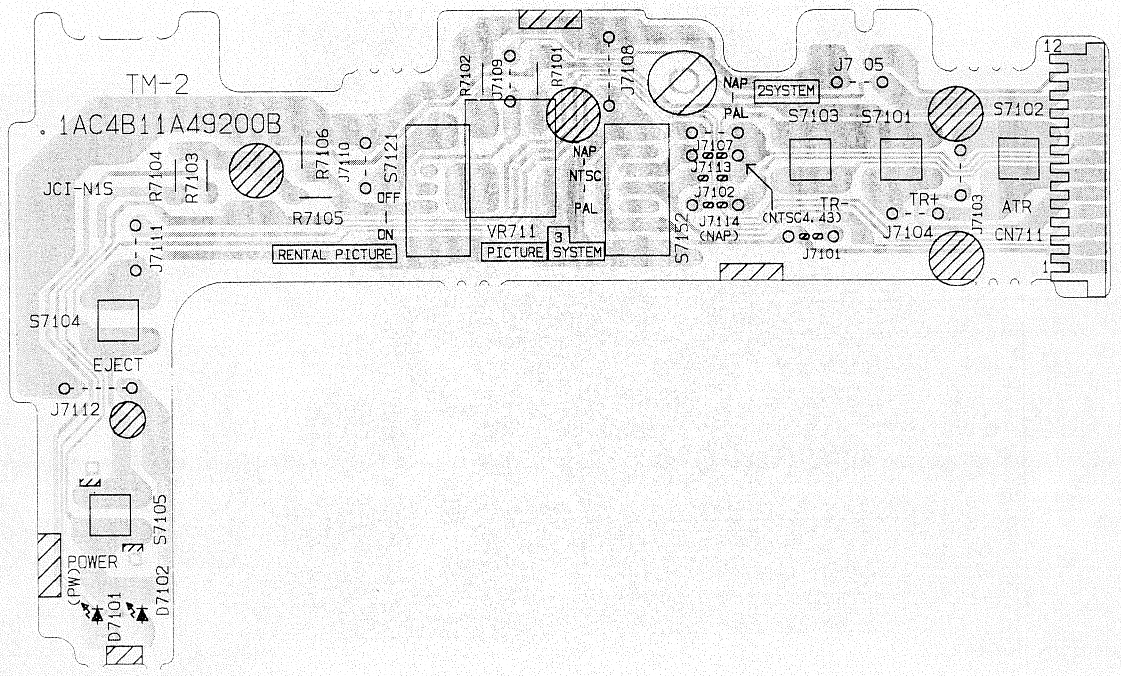

TM-1
S7051 Shuttle
CN704
KEY 0
KEY 1
KEY 2
SEG f
KEY 3
SEG h
KEY 1
SEG i
A7001
RR701
OUT
VCC
GND
SW7006
ATR
CN701
CTL-S
ATR LED
SWD 5V
SEG a
SEG b
SEG c
SEG d
SEG e
SEG f
SEG g
SEG h
SEG i
SEG j
SEG k
SEG l
SEG m
SEG n
SEG o
SEG p
GRID 1
GRID 2
GRID 3
GRID 4
GRID 5
GRID 6
GRID 7
GRID 8
GRID 9
KEY 3
KEY 2
KEY 1
KEY 0
REMOCON
BACK UP 5V
ALWAYS 5V
AC 3.0V (2)
AC 3.0V (1)
GND
NAP LED
NTSC4.43 LED
TO CP-1(SY-A) CN302
OPT TUNE 0
OPT MK1
OPT SV1
REW
FF
CH UP
OPT TUNE 1
OPT LP
OPT MK2
OPT SV2
C.FAST
PLAY
STOP
CH DOWN
OPT TUNE 2
OPT VISS
OPT MK3
OPT OSD
REC
PAUSE
PRESET
OK
※ SLV-225EI ONLY
OPT TUNE 3
OPT NTSC SEC
OPT AVC
CL S7007
R7001
R7002
R7003
R7004
100K
※ NOT SPECIFIED DIODE....1SS133 or GMA01
VOLTAGE : EE MODE
Q7072
SWITCH
CTL S
S7152 CONSTRUCTION
TM-2
CN711
CN703
S7152 COLOR SYSTEM
S7104 EJECT
S7105 POWER
S7101 TRK-
ATR
S7102 TRK+
S7103
J7101
J7114
SEG e
SEG h
SEG i
SEG m
SEG g
KEY 0
KEY 1
KEY 2
KEY 3
SWD 5V
GND
CTL PIC
CN702
RESET
CTL PIC
TO CP-1(VD-A) CN141
POWER
PICTUR
D7101
D7102
R7101
R7102
R7103
R7104
VR711

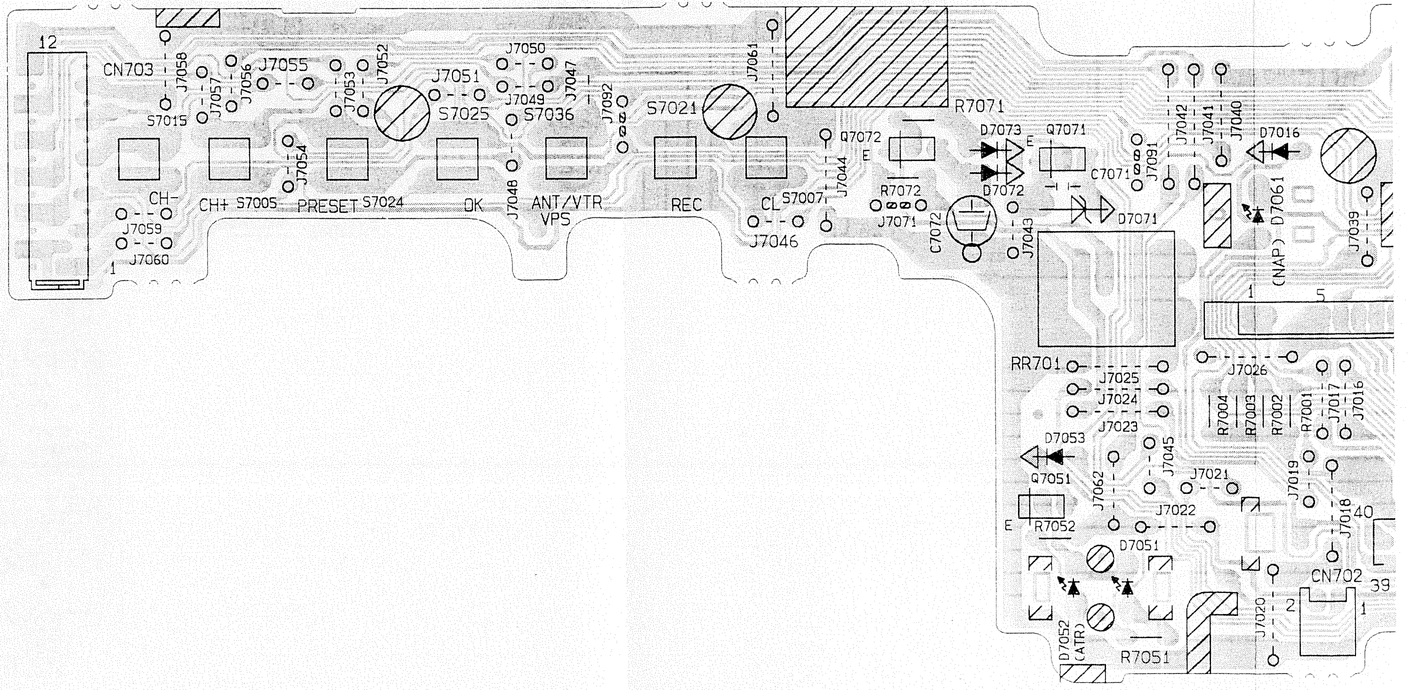
## A7101 DISPLAY (I

## 9G: GRID & SEGMENT ASSIGMENT


9G
8G
7G
6G
5G
4G
3G
a
b
c
d
e
PROG
Hi-Fi
L R
DATE
LP
1a
1b
1c
1d
1e
1f
1g
1h
2a
2b
2c
2d
2e
2f
2g
h
M
H
ON
ST
BIL
SC
OFF
VPS
QSR
VTR
M

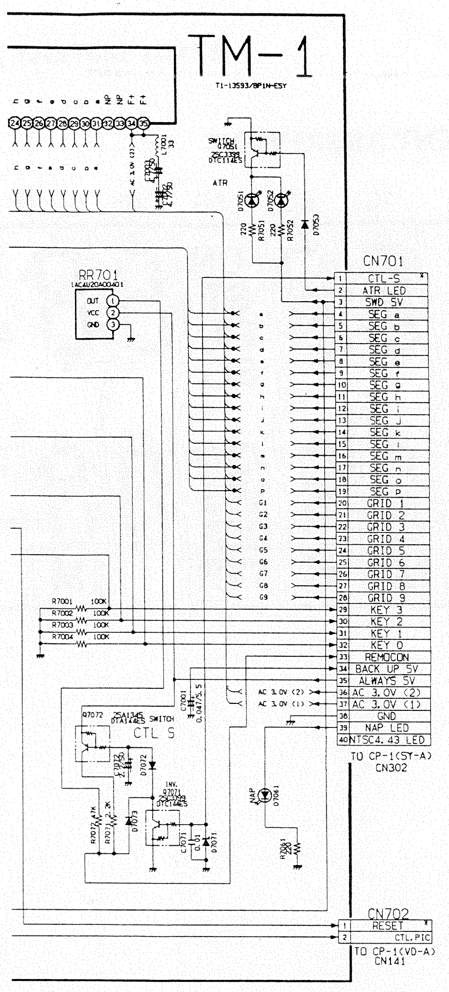
### TM-2 P. C. B.


TM-2
1AC4B11A49200B
JCI-N1S
R7104
R7103
R7106
R7105
J7110
S7121
OFF
ON
RENTAL PICTURE
R7102
J7109
R7101
J7108
VR711
PICTURE
3 SYSTEM
NAP
NTSC
PAL
2SYSTEM
S7152
J7114 (NAP)
J7107
J7102
(NTSC4.43)
J7101
S7103
S7101
S7102
J7105
TR-
TR+
ATR
CN711
J7104
J7103
J7111
12
S7104
EJECT
J7112
S7105
POWER
(PW)
D7101
D7102


12
CN703
J7058
J7057
J7056
J7055
S7015
J7053
J7052
J7051
J7050
S7025
J7049
S7036
J7047
J7092
S7021
J7061
R7071
CH-
CH+ S7005
PRESET S7024
OK
J7048
ANT/VTR
VPS
REC
CL S7007
J7046
J7059
J7060
J7054
J7044
Q7072
D7073
Q7071
D7072
R7072
J7071
C7072
J7043
C7071
D7071
J7091
J7042
J7041
J7040
D7016
D7061
(NAP)
J7039
RR701
J7025
J7024
J7023
J7026
R7004
R7003
R7002
R7001
J7017
J7016
D7053
Q7051
J7062
J7045
J7021
J7019
J7022
J7018
R7052
D7051
D7052 (ATR)
J7020
R7051
CN702
39
40
1
2
5

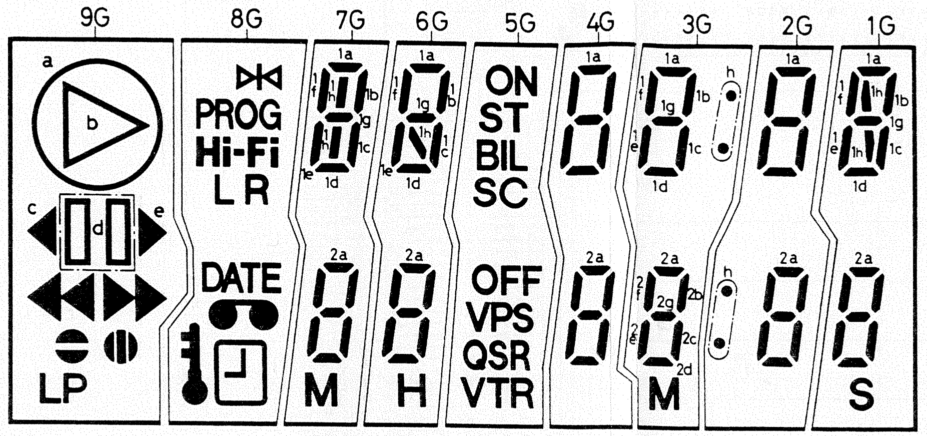
K
J
I
H
G
F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16


TM-1
RR701
CN701
CTL-S
ATR LED
SWD 5V
SEG a
SEG b
SEG c
SEG d
GRID 1
GRID 2
GRID 3
GRID 4
GRID 5
GRID 6
GRID 7
GRID 8
GRID 9
KEY 3
KEY 2
KEY 1
KEY 0
REMOCON
BACK UP 5V
ALWAYS 5V
AC 3.0V (2)
AC 3.0V (1)
GND
NAP LED
NTSC4.43 LED
TO CP-1(SY-A) CN302
CTL S
CN702
RESET
CTL.PIC
TO CP-1(VD-A) CN141

## A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

### 9G: GRID & SEGMENT ASSIGMENT

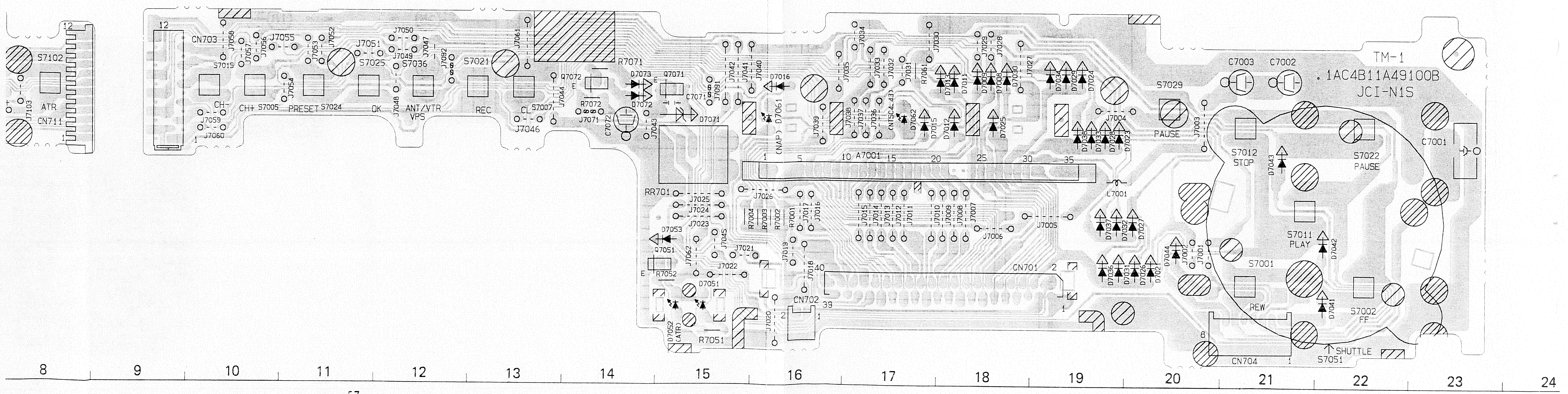

9G
8G
7G
6G
5G
4G
3G
2G
1G
a
b
c
d
e
PROG
Hi-Fi
L R
ON
ST
BIL
SC
DATE
OFF
VPS
QSR
VTR
LP
M
H
M
S

### ANODE CONNECTION

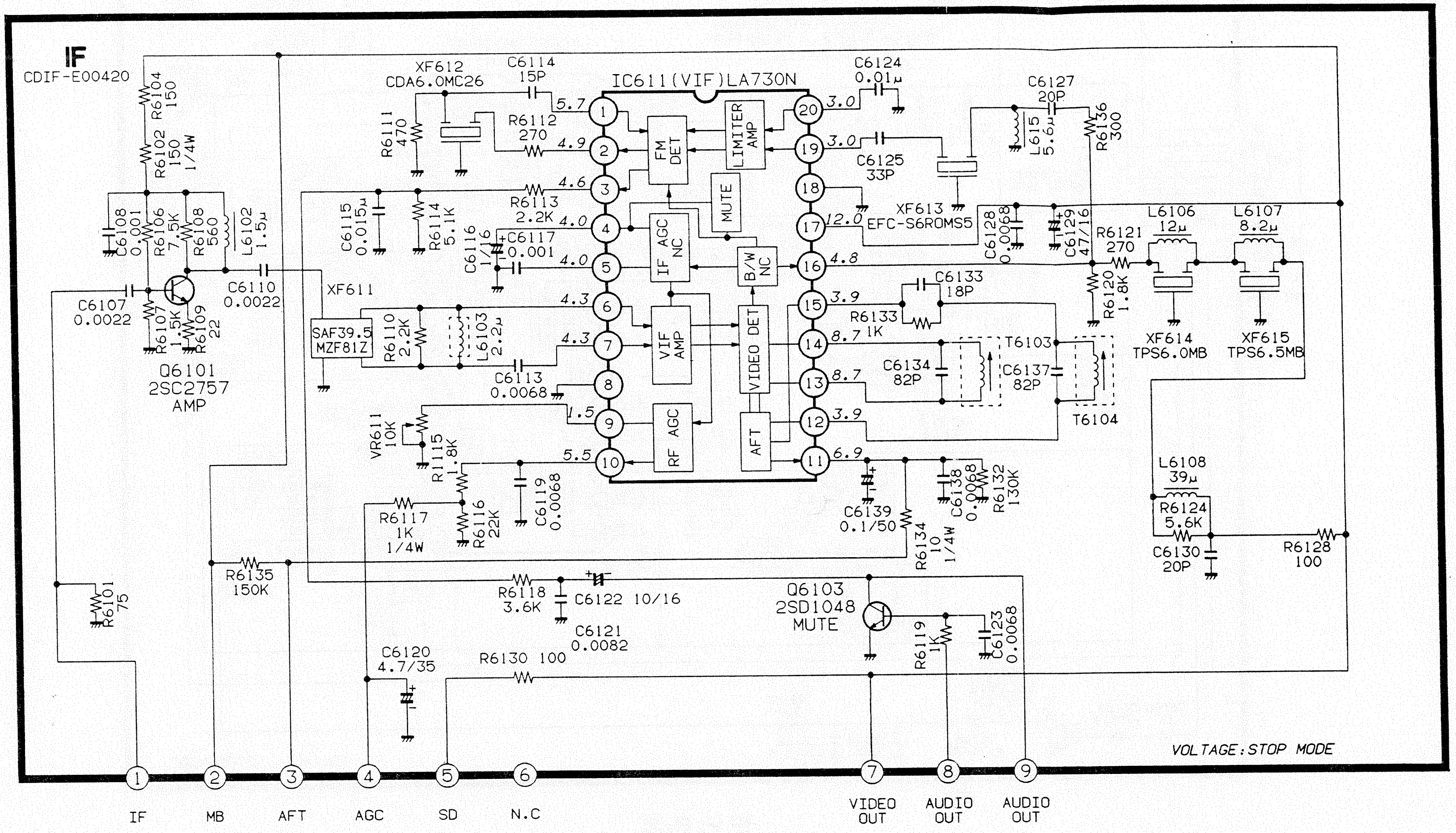
| | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|---|---|
| a | ○ | ¤ | 1a | 1a | **ON** | 1a | 1a | 1a | 1a |
| b | ▷ | ⋈ | 1b | 1b | **ST** | 1b | 1b | 1b | 1b |
| c | ◀ | **PROG** | 1c | 1c | **BIL** | 1c | 1c | 1c | 1c |
| d | ▯▯ | **Hi-Fi** | 1d | 1d | **SC** | 1d | 1d | 1d | 1d |
| e | ▶ | **L** | 1e | 1e | – | 1e | 1e | 1e | 1e |
| f | – | **R** | 1f | 1f | – | 1f | 1f | 1f | 1f |
| g | – | – | 1g | 1g | – | 1g | 1g | 1g | 1g |
| h | – | – | 1h | 1h | – | – | : (UPPER) | : (LOWER) | 1h |
| i | ◀◀ | **DATE** | 2a | 2a | **OFF** | 2a | 2a | 2a | 2a |
| j | ▶▶ | ∞ | 2b | 2b | **VPS** | 2b | 2b | 2b | 2b |
| k | ⊖ | 🌡 | 2c | 2c | **QSR** | 2c | 2c | 2c | 2c |
| l | ◍ | ◰ | 2d | 2d | **VTR** | 2d | 2d | 2d | 2d |
| m | **LP** | – | 2e | 2e | – | 2e | 2e | 2e | 2e |
| n | **EP** | – | 2f | 2f | – | 2f | 2f | 2f | 2f |
| o | – | – | 2g | 2g | – | 2g | 2g | 2g | 2g |
| p | – | – | **M** | **H** | – | **H** | **M** | **M** | **S** |

9G/QP

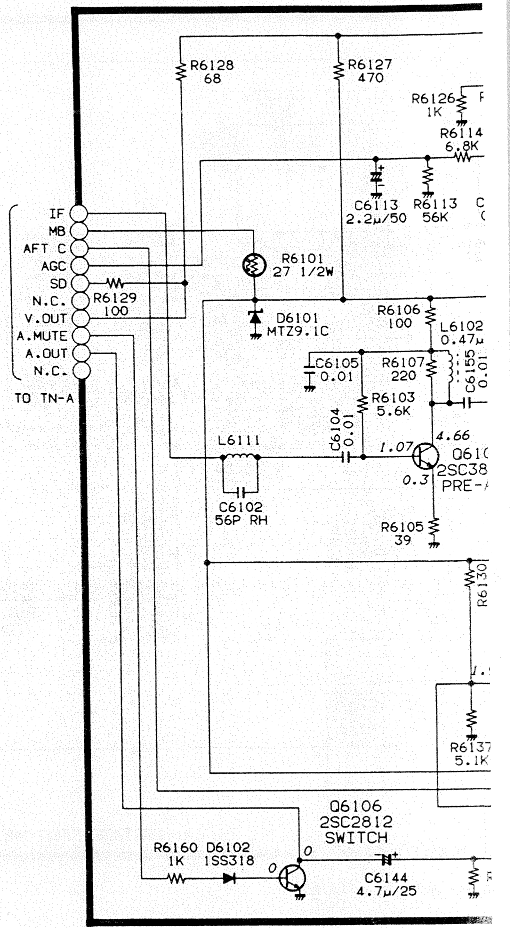
TM-1 P. C. B.


TM-1
1AC4B11A49100B
JCI-N1S
S7102
ATR
CN711
J7103
CN703
S7015
S7005
CH+
CH-
PRESET
S7024
OK
ANT/VTR
VPS
REC
S7025
S7036
S7021
S7007
CL
J7046
R7071
D7073
Q7071
D7072
R7072
J7071
C7072
D7071
D7016
D7061
A7001
C7003
C7002
S7029
PAUSE
S7012
STOP
S7022
PAUSE
C7001
L7001
S7011
PLAY
S7001
REW
S7002
FF
CN704
SHUTTLE
S7051
RR701
D7053
Q7051
R7052
D7051
D7052 (ATR)
R7051
CN702
CN701
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

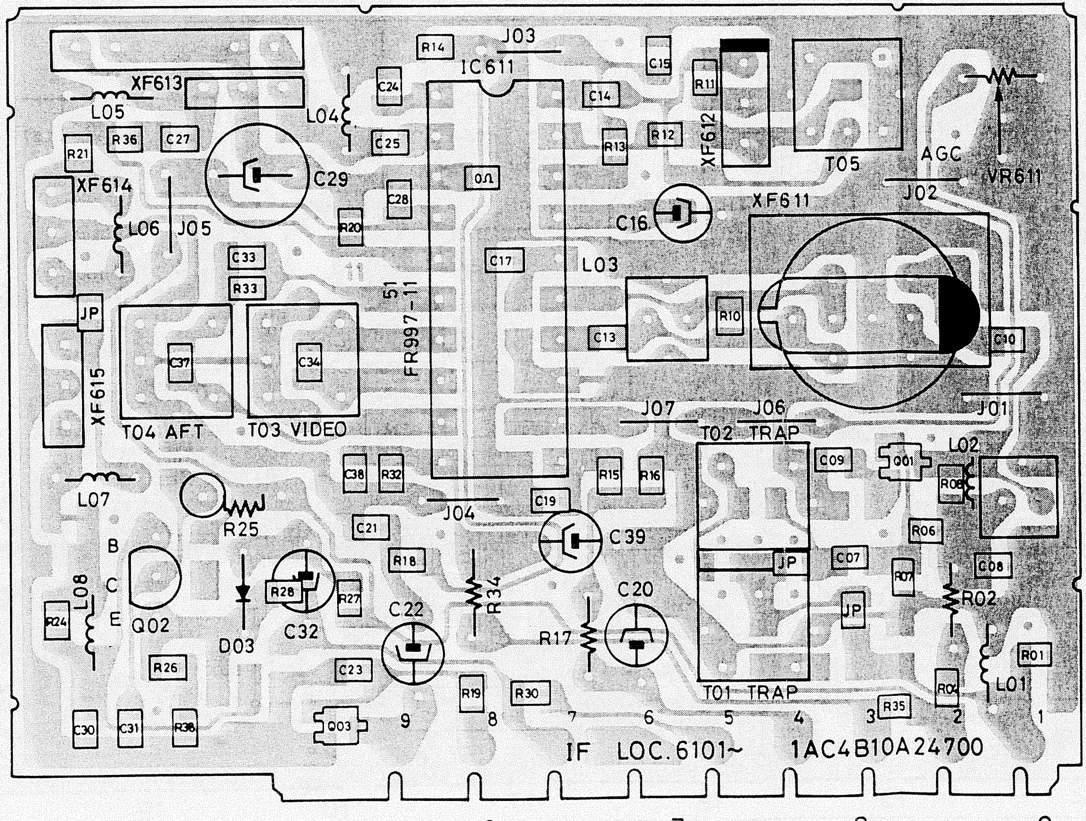
## IF CIRCUIT DIAGRAM (SLV-225UB ONLY)

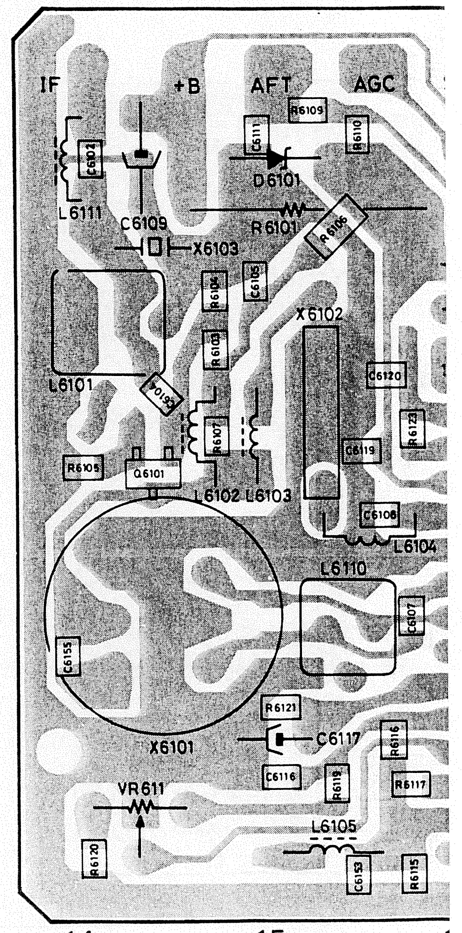

IF
CDIF-E00420
IC611(VIF)LA730N
XF612 CDA6.0MC26
C6114 15P
C6124 0.01μ
C6127 20P
FM DET
LIMITER AMP
MUTE
IF AGC NC
B/W NC
VIF AMP
VIDEO DET
RF AGC
AFT
XF613 EFC-S6R0MS5
XF611 SAF39.5 MZF81Z
L6106 12μ
L6107 8.2μ
XF614 TPS6.0MB
XF615 TPS6.5MB
T6103
T6104
Q6101 2SC2757 AMP
Q6103 2SD1048 MUTE
VR611 10K
L6108 39μ
R6124 5.6K
R6128 100
C6130 20P
R6135 150K
R6101 75
R6118 3.6K
C6122 10/16
C6121 0.0082
C6120 4.7/35
R6130 100
R6119 1K
C6123 0.0068
R6134 10 1/4W
R6132 130K
C6139 0.1/50
VOLTAGE:STOP MODE
IF
MB
AFT
AGC
SD
N.C
VIDEO OUT
AUDIO OUT
AUDIO OUT

## IF CIRC

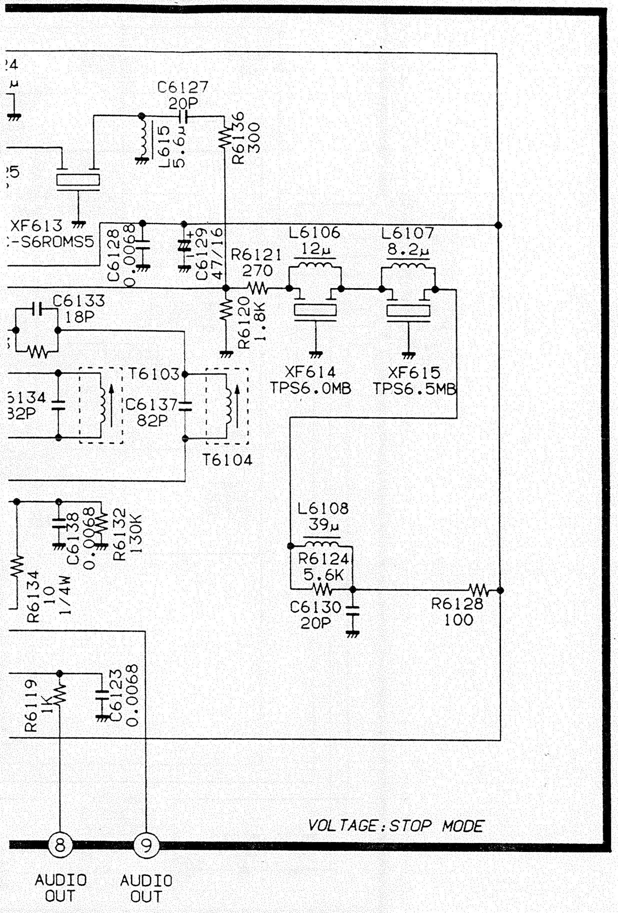

IF
MB
AFT C
AGC
SD
N.C.
V.OUT
A.MUTE
A.OUT
N.C.
TO TN-A
R6128 68
R6127 470
R6101 27 1/2W
D6101 MTZ9.1C
R6129 100
C6113 2.2μ/50
R6113 56K
L6111
C6102 56P RH
Q6106 2SC2812 SWITCH
R6160 1K
D6102 1SS318
C6144 4.7μ/25

## IF P. C. B.

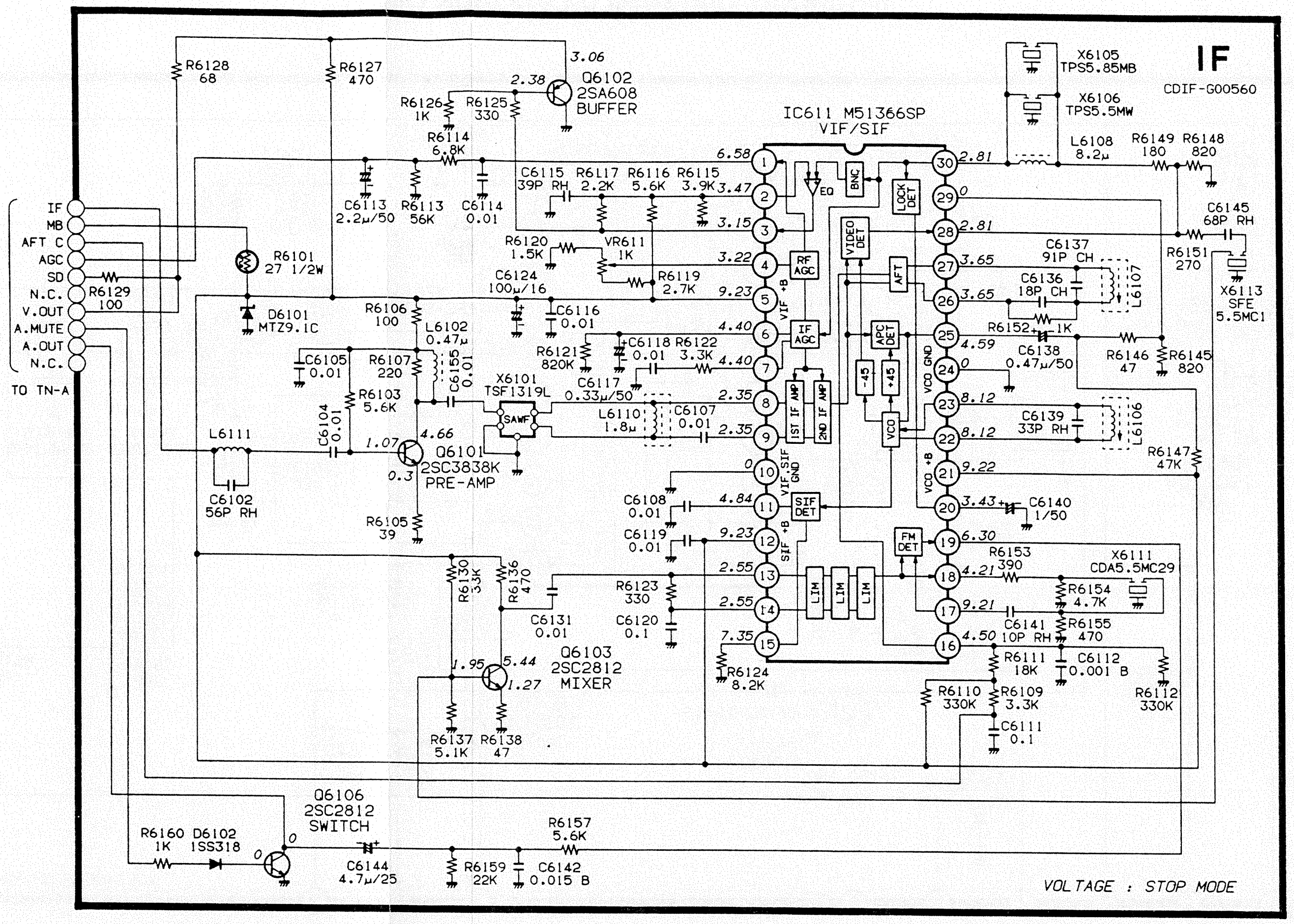

IC611
XF613
XF614
XF615
XF612
XF611
T05
T04 AFT
T03 VIDEO
T02 TRAP
T01 TRAP
VR611
AGC
Q02
D03
FR997-11
IF LOC.6101~ 1AC4B10A24700


IF
+B
AFT
AGC
D6101
X6103
X6102
X6101
L6101
L6102 L6103
L6104
L6105
L6110
L6111
Q6101
VR611

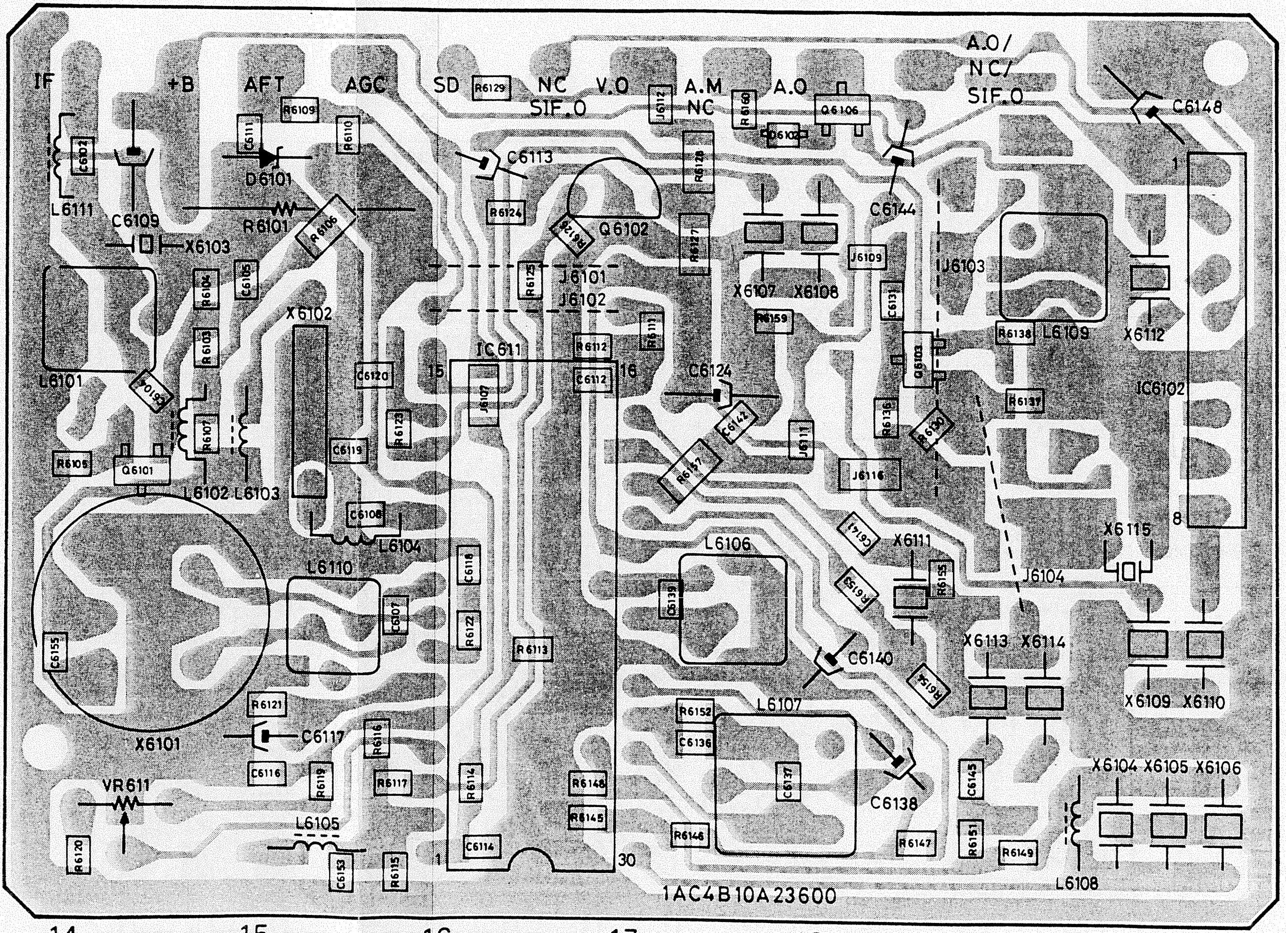
## 3 ONLY)

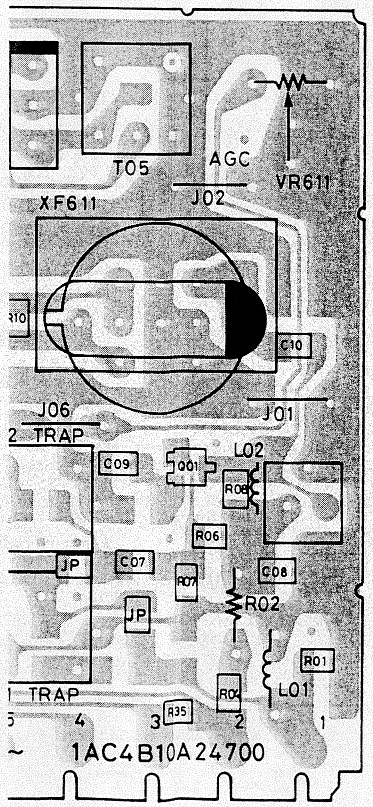

C6127
20P
L615
5.6μ
R6136
300
XF613
-S6R0MS5
C6128
0.0068
C6129
47/16
R6121
270
L6106
12μ
L6107
8.2μ
R6120
1.8K
C6133
18P
T6103
C6134
82P
C6137
82P
T6104
XF614
TPS6.0MB
XF615
TPS6.5MB
C6138
0.0068
R6132
130K
R6134
10
1/4W
L6108
39μ
R6124
5.6K
C6130
20P
R6128
100
R6119
1K
C6123
0.0068
VOLTAGE:STOP MODE
8
9
AUDIO
OUT
AUDIO
OUT

## IF CIRCUIT DIAGRAM (SLV-225EI ONLY)


IF
CDIF-G00560
X6105
TPS5.85MB
X6106
TPS5.5MW
IC611 M51366SP
VIF/SIF
Q6102
2SA608
BUFFER
R6128
68
R6127
470
R6126
1K
R6125
330
R6114
6.8K
C6115
39P RH
R6117
2.2K
R6116
5.6K
R6115
3.9K
C6113
2.2μ/50
R6113
56K
C6114
0.01
R6120
1.5K
VR611
1K
R6119
2.7K
C6124
100μ/16
C6116
0.01
R6121
820K
C6118
0.01
R6122
3.3K
R6101
27 1/2W
D6101
MTZ9.1C
R6106
100
L6102
0.47μ
R6129
100
C6105
0.01
R6107
220
R6103
5.6K
C6155
0.01
X6101
TSF1319L
C6117
0.33μ/50
L6110
1.8μ
C6107
0.01
C6104
0.01
L6111
C6102
56P RH
Q6101
2SC3838K
PRE-AMP
C6108
0.01
C6119
0.01
R6105
39
R6130
3.3K
R6136
470
R6123
330
C6131
0.01
C6120
0.1
Q6103
2SC2812
MIXER
R6124
8.2K
R6137
5.1K
R6138
47
L6108
8.2μ
R6149
180
R6148
820
C6145
68P RH
R6151
270
X6113
SFE
5.5MC1
C6137
91P CH
C6136
18P CH
L6107
R6152
1K
C6138
0.47μ/50
R6146
47
R6145
820
C6139
33P RH
L6106
R6147
47K
C6140
1/50
R6153
390
X6111
CDA5.5MC29
R6154
4.7K
C6141
10P RH
R6155
470
R6111
18K
C6112
0.001 B
R6110
330K
R6109
3.3K
R6112
330K
C6111
0.1
Q6106
2SC2812
SWITCH
R6160
1K
D6102
1SS318
C6144
4.7μ/25
R6159
22K
C6142
0.015 B
R6157
5.6K
IF
MB
AFT C
AGC
SD
N.C.
V.OUT
A.MUTE
A.OUT
N.C.
TO TN-A
EQ
BNC
LOCK DET
VIDEO DET
RF AGC
AFT
IF AGC
APC DET
1ST IF AMP
2ND IF AMP
-45
+45
VCO
SIF DET
FM DET
LIM
LIM
LIM
VIF +B
VIF SIF GND
SIF +B
VCO GND
VCO +B
3.06
2.38
6.58
3.47
3.15
3.22
9.23
4.40
4.40
2.35
2.35
4.84
9.23
2.55
2.55
7.35
4.66
1.07
0.3
1.95
5.44
1.27
2.81
0
2.81
3.65
3.65
4.59
0
8.12
8.12
9.22
3.43
6.30
4.21
9.21
4.50
0
VOLTAGE : STOP MODE

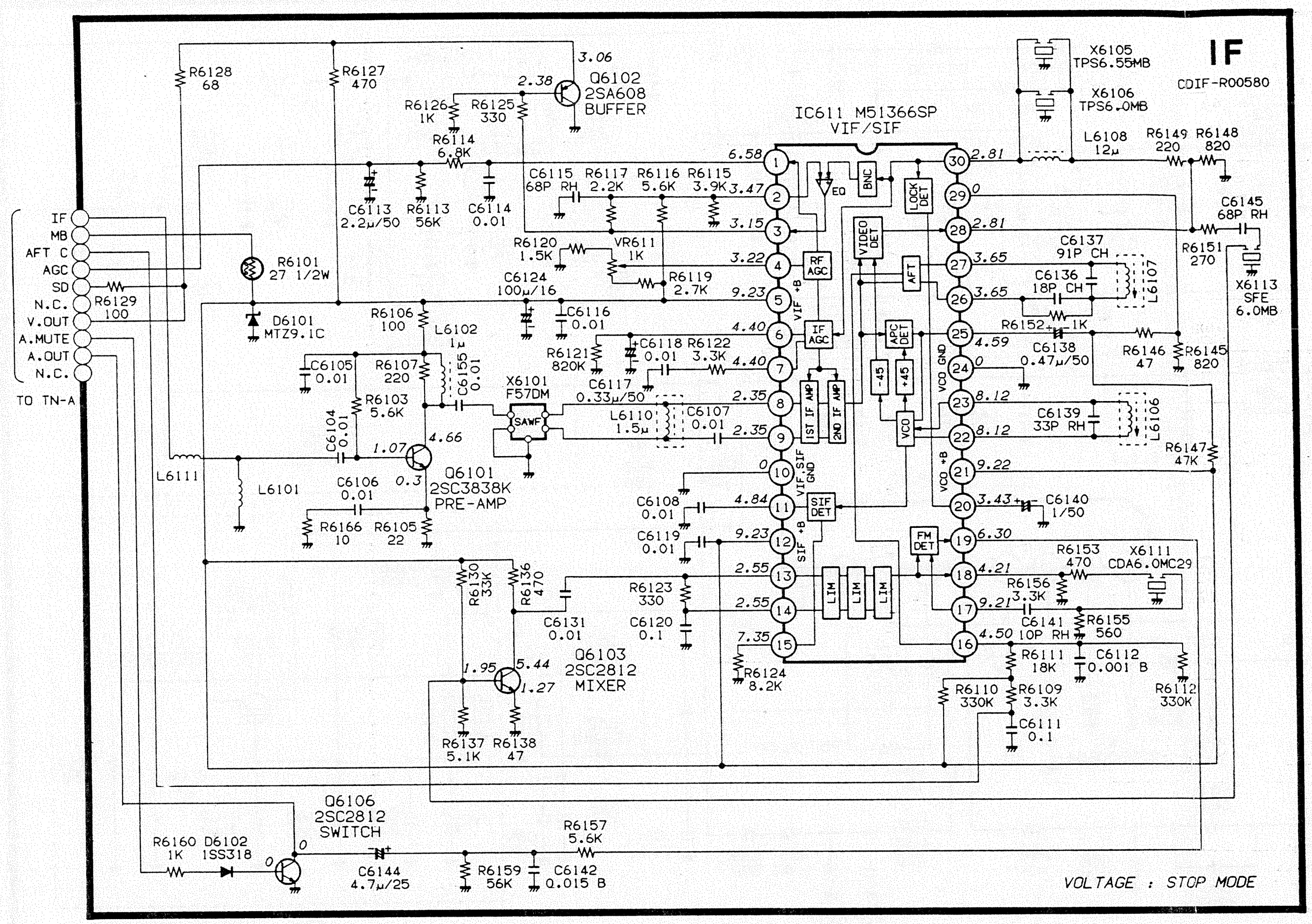
## IF P. C. B.


IF
+B
AFT
AGC
SD
NC
SIF.O
V.O
A.M
NC
A.O
A.O/
NC/
SIF.O
C6102
L6111
C6109
X6103
D6101
R6101
R6106
R6109
R6110
C6113
R6124
Q6102
R6129
R6123
Q6106
C6144
C6148
J6101
J6102
J6103
J6104
J6109
J6116
X6107
X6108
X6112
X6102
L6101
IC611
IC6102
15
16
1
30
1
8
C6124
Q6101
L6102
L6103
R6105
R6107
C6115
C6108
L6104
L6110
X6101
C6155
R6113
R6112
R6121
C6117
C6116
R6119
R6117
R6114
C6114
VR611
L6105
C6153
R6115
R6120
L6106
C6140
X6111
L6107
C6138
R6152
C6136
R6148
R6145
R6146
R6147
R6151
R6149
C6143
C6137
R6138
L6109
R6137
X6115
X6113
X6114
X6109
X6110
X6104
X6105
X6106
L6108
1AC4B10A23600

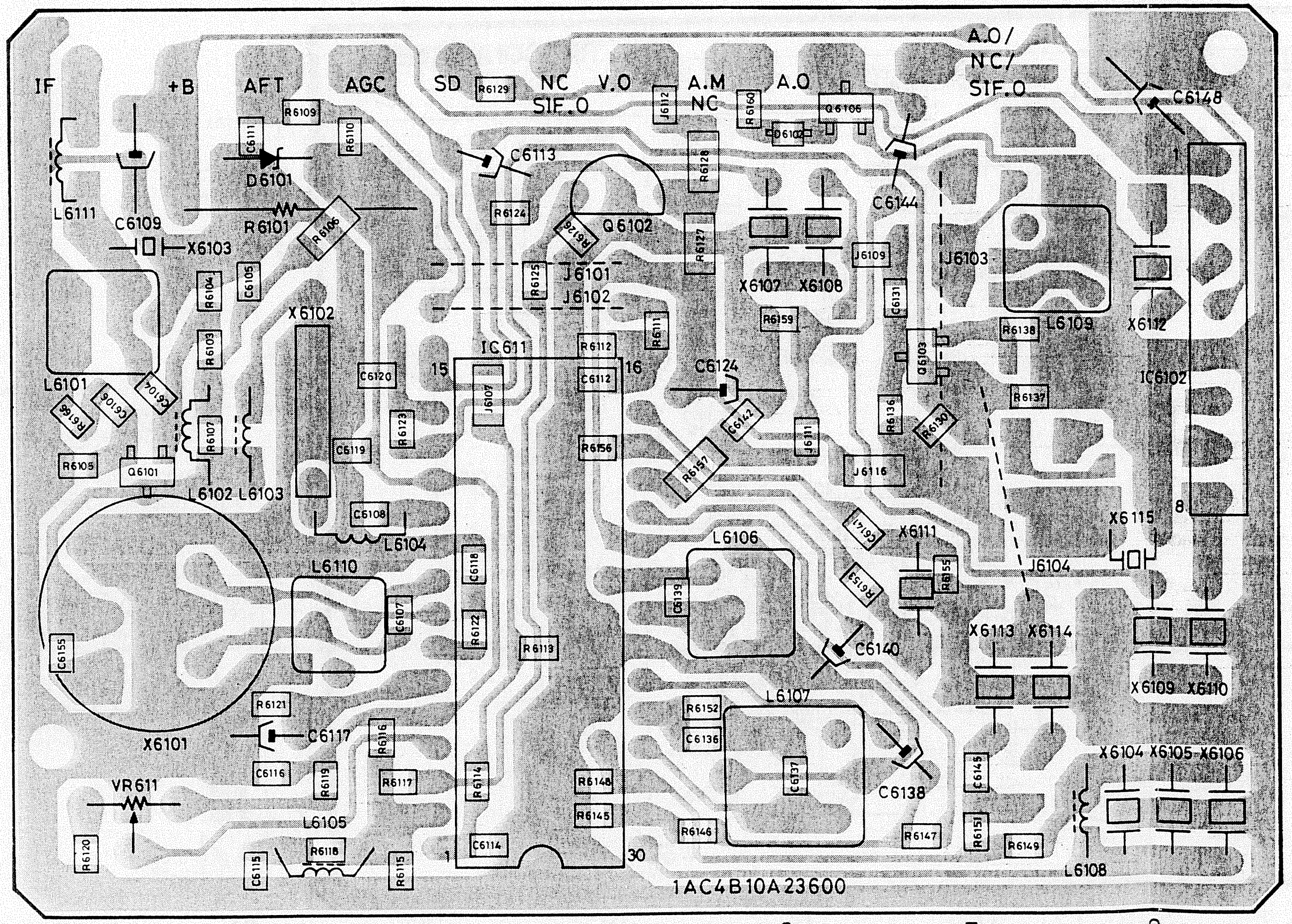

T05
AGC
VR611
XF611
J02
C10
J06
TRAP
J01
C09
Q01
L02
R08
R06
JP
C07
R07
C08
R02
JP
R01
TRAP
L01
R04
R35
5
4
3
2
1
1AC4B10A24700

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

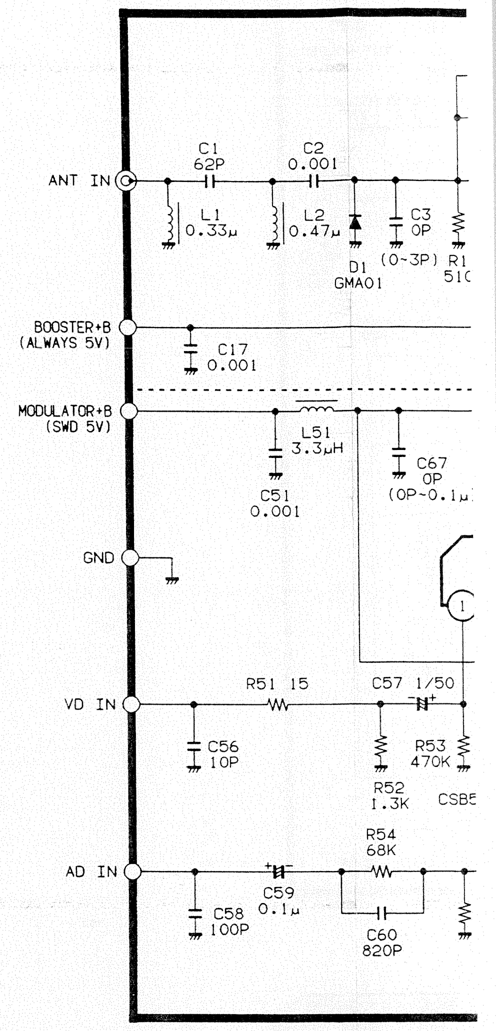
## IF CIRCUIT DIAGRAM (SLV-X27 ONLY)


IF
CDIF-R00580
IC611 M51366SP
VIF/SIF
Q6102
2SA608
BUFFER
Q6101
2SC3838K
PRE-AMP
Q6103
2SC2812
MIXER
Q6106
2SC2812
SWITCH
X6105
TPS6.55MB
X6106
TPS6.0MB
X6101
F57DM
X6111
CDA6.0MC29
X6113
SFE
6.0MB
D6101
MTZ9.1C
D6102
1SS318
IF
MB
AFT C
AGC
SD
N.C.
V.OUT
A.MUTE
A.OUT
N.C.
TO TN-A
VOLTAGE : STOP MODE

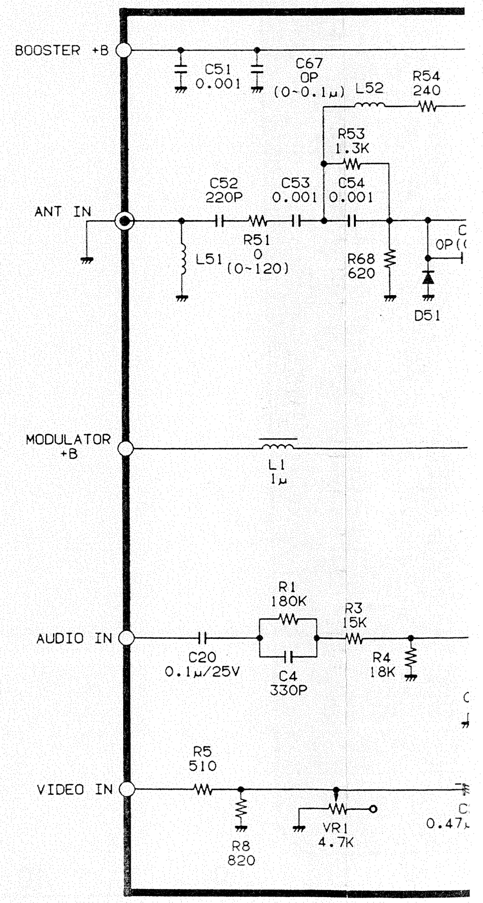
## IF P. C. B.

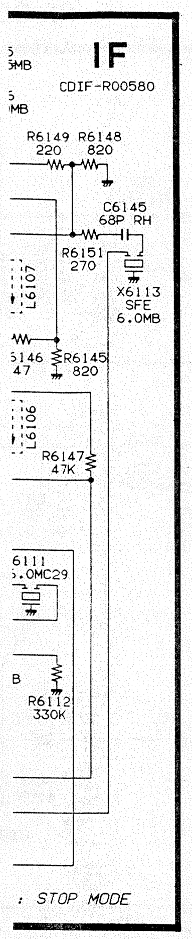

IF
+B
AFT
AGC
SD
NC
SIF.O
V.O
A.M
NC
A.O
A.O/
NC/
SIF.O
IC611
IC6102
VR611
X6101
1AC4B10A23600

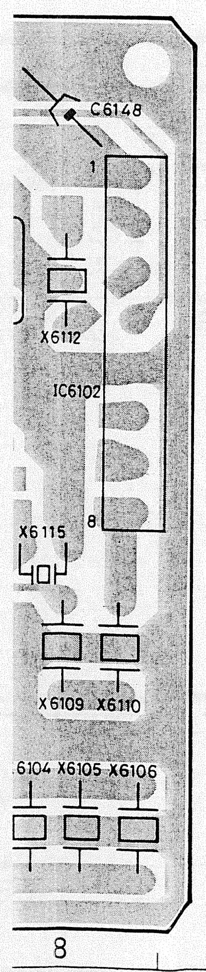
## RF CO


ANT IN
BOOSTER+B
(ALWAYS 5V)
MODULATOR+B
(SWD 5V)
GND
VD IN
AD IN
D1
GMA01

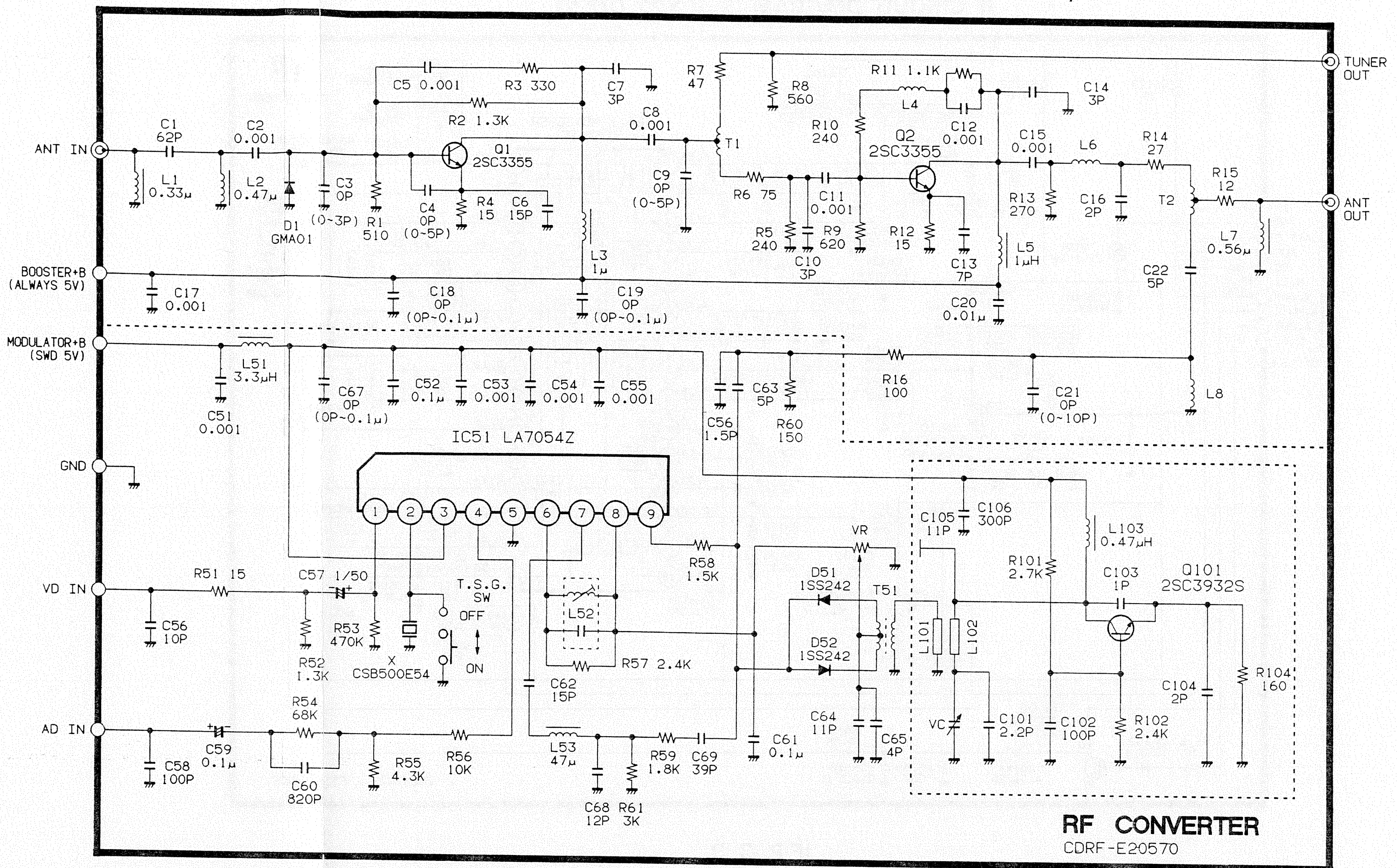
**NOTE:** Either one of these RF converters, type CDRF-E20570 or CDRF-E20730 is used, depending on availability.


BOOSTER +B
ANT IN
MODULATOR
+B
AUDIO IN
VIDEO IN
D51
VR1
4.7K

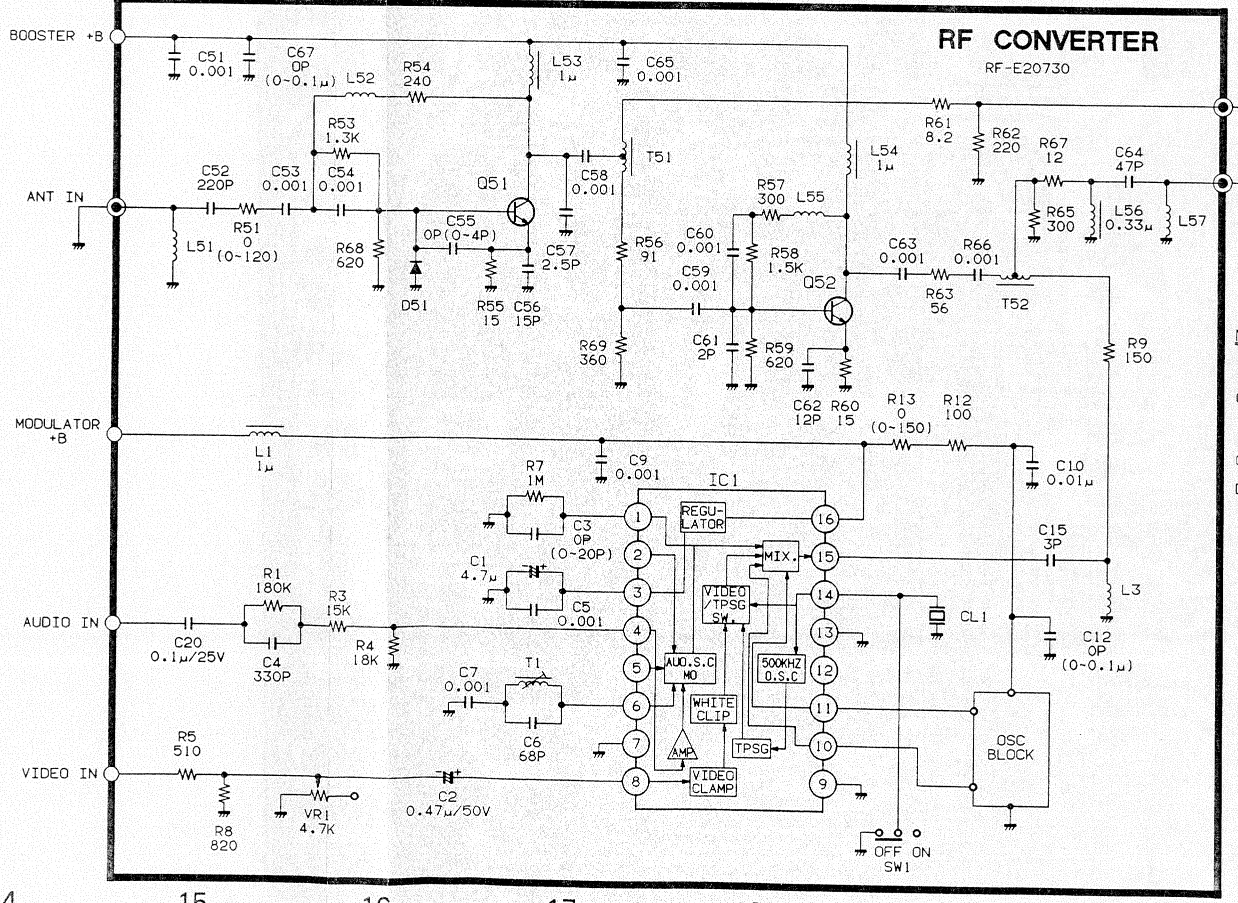

IF
CDIF-R00580
R6149 220
R6148 820
C6145 68P RH
R6151 270
X6113 SFE 6.0MB
L6107
R6146 47
R6145 820
L6106
R6147 47K
R6112 330K
: STOP MODE


C6148
X6112
IC6102
X6115
X6109
X6110
X6104
X6105
X6106

## RF CONVERTER CIRCUIT DIAGRAM (SLV-225UB, SLV-225EI ONLY)


ANT IN
BOOSTER+B (ALWAYS 5V)
MODULATOR+B (SWD 5V)
GND
VD IN
AD IN
TUNER OUT
ANT OUT
Q1 2SC3355
Q2 2SC3355
D1 GMA01
IC51 LA7054Z
T.S.G. SW
OFF
ON
X CSB500E54
Q101 2SC3932S
D51 1SS242
D52 1SS242
T51
VR
VC
L101
L102
L103 0.47μH
T1
T2
RF CONVERTER
CDRF-E20570

**NOTE:** Either one of these RF converters, type CDRF-E20570 or CDRF-E20730 is used, depending on availability.


RF CONVERTER
RF-E20730
BOOSTER +B
ANT IN
MODULATOR +B
AUDIO IN
VIDEO IN
VTR TU
ANT OUT
Q51
Q52
T51
T52
D51
IC1
REGU-LATOR
MIX.
VIDEO /TPSG SW
AUD.S.C MO
500KHZ O.S.C
WHITE CLIP
AMP
TPSG
VIDEO CLAMP
OSC BLOCK
CL1
OFF ON
SW1

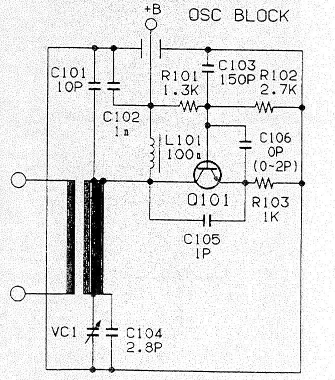
NOTE

IC1 : ALP102, ALP102A OR EQUIVALENT

Q51, Q52: 2SC2570, 2SC3355, MPS571, MPS911, OR EQUIVALENT

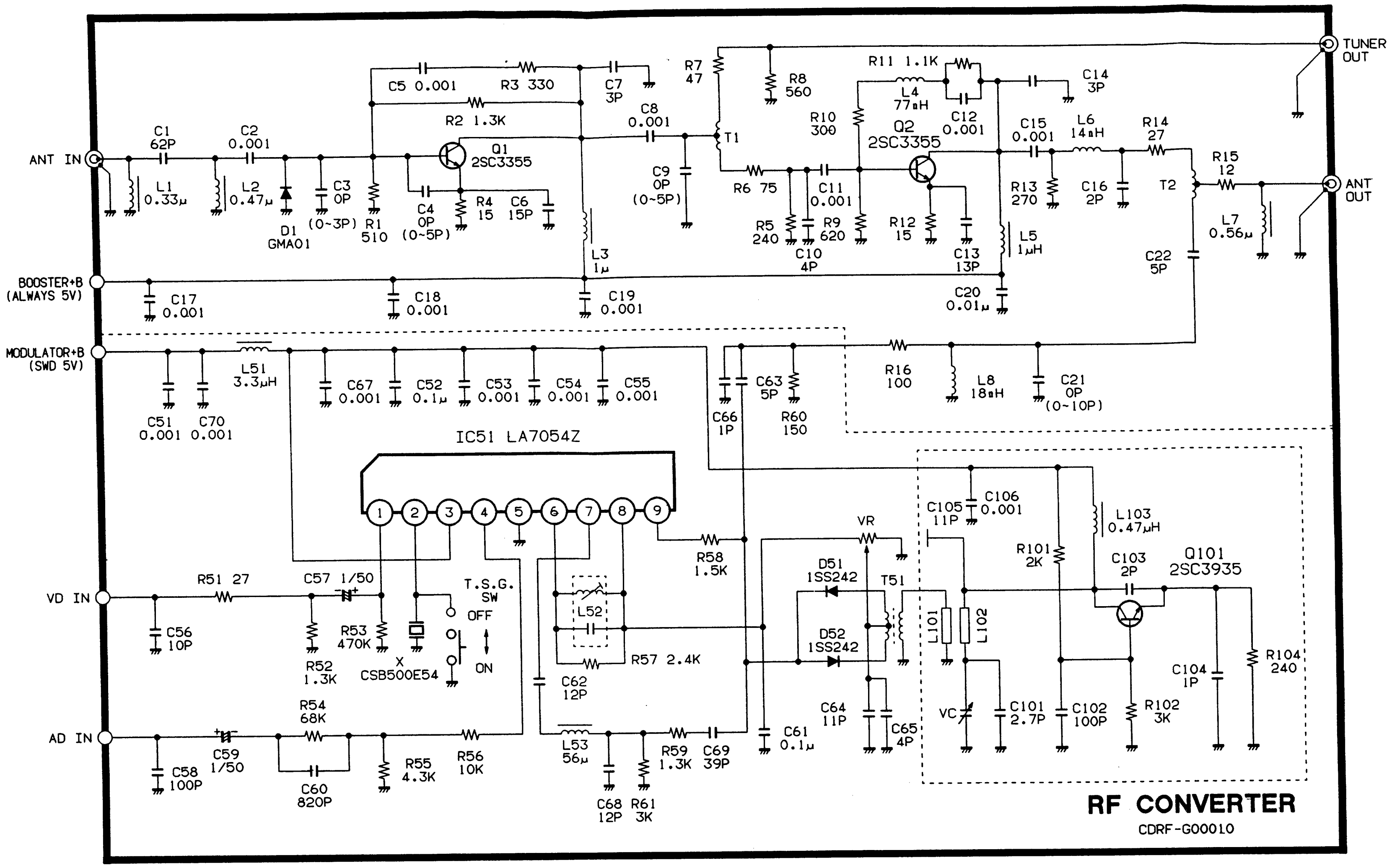
Q101 : 2SC2480 OR EQUIVALENT

D51 : 1SS133, 1SS83 OR EQUIVALENT


+B
OSC BLOCK
C101 10P
R101 1.3K
C103 150P
R102 2.7K
C102 1n
L101 100n
C106 0P (0-2P)
Q101
R103 1K
C105 1P
VC1
C104 2.8P

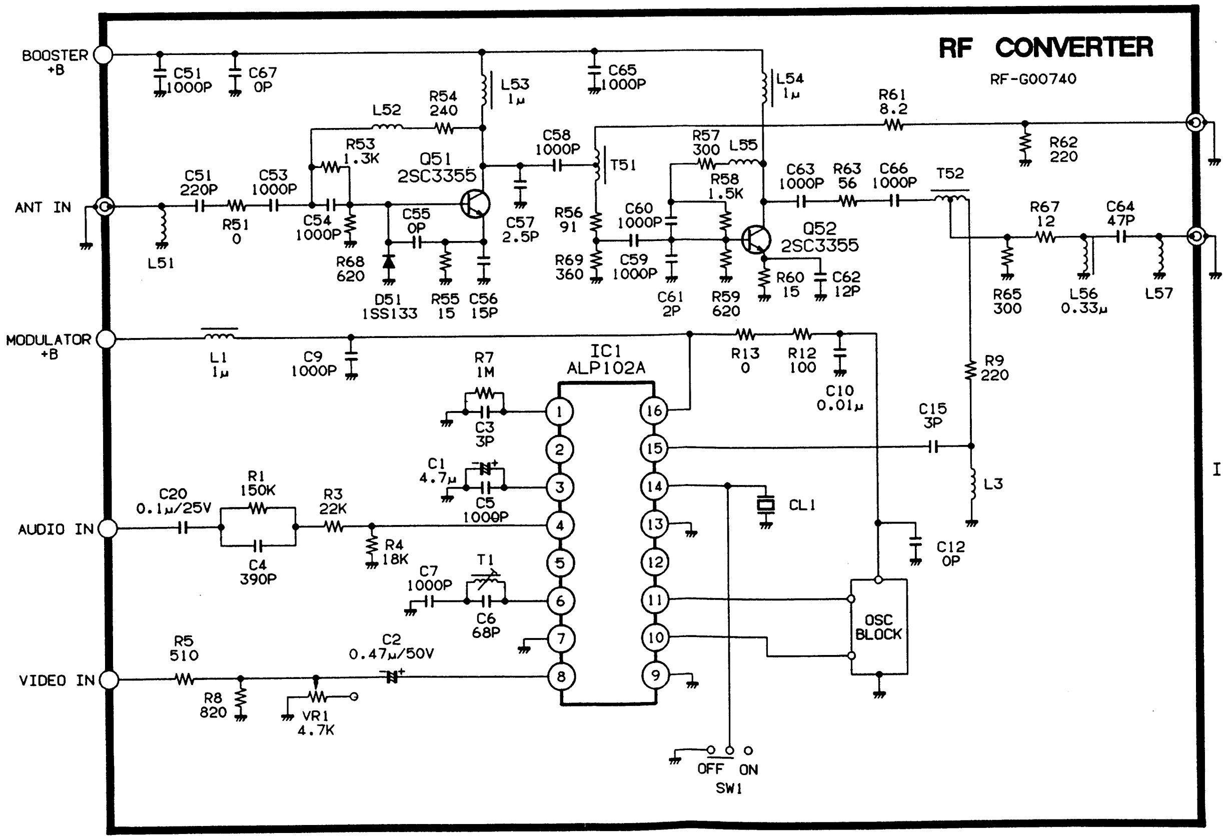
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## RF CONVERTER CIRCUIT DIAGRAM (SLV-X27 ONLY)

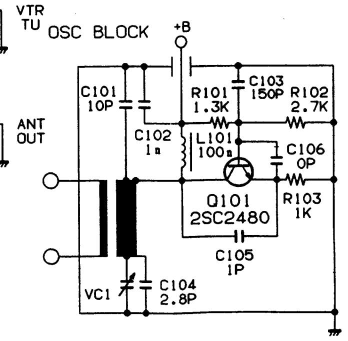


TUNER OUT
ANT OUT
ANT IN
BOOSTER+B (ALWAYS 5V)
MODULATOR+B (SWD 5V)
VD IN
AD IN
IC51 LA7054Z
Q1 2SC3355
Q2 2SC3355
Q101 2SC3935
D1 GMA01
D51 1SS242
D52 1SS242
T.S.G. SW
OFF
ON
X CSB500E54
T1
T2
T51
VR
VC
RF CONVERTER
CDRF-G00010

**NOTE:** Either one of these RF converters, type CDRF-G00010 or CDRF-G00740 is used, depending on availability.

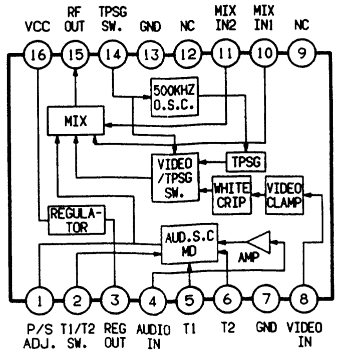


RF CONVERTER
RF-G00740
BOOSTER +B
ANT IN
MODULATOR +B
AUDIO IN
VIDEO IN
VTR TU
ANT OUT
Q51 2SC3355
Q52 2SC3355
D51 1SS133
IC1 ALP102A
CL1
OSC BLOCK
OFF
ON
SW1
T51
T52



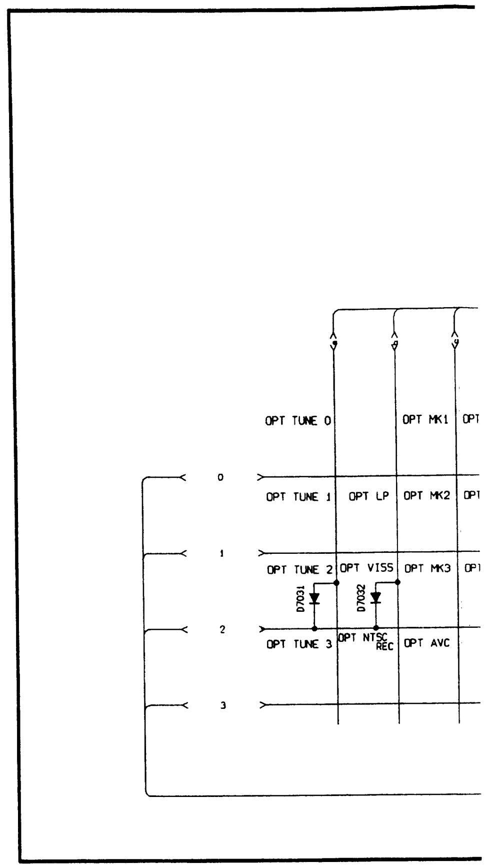
OSC BLOCK
+B
C101 10P
R101 1.3K
C103 150P
R102 2.7K
C102 1μ
L101 100μ
C106 0P
Q101 2SC2480
R103 1K
C105 1P
VC1
C104 2.8P

IC1 BLOCK DIAGRAM

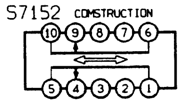


VCC
RF OUT
TPSG SW.
GND
NC
MIX IN2
MIX IN1
NC
MIX
500KHZ O.S.C.
VIDEO /TPSG SW.
TPSG
WHITE CRIP
VIDEO CLAMP
REGULA-TOR
AUD.S.C MD
AMP
P/S ADJ.
T1/T2 SW.
REG OUT
AUDIO IN
T1
T2
GND
VIDEO IN

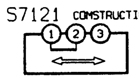
TM-1, 2 BOA



OPT TUNE 0
OPT MK1
OPT TUNE 1
OPT LP
OPT MK2
OPT TUNE 2
OPT VISS
OPT MK3
OPT TUNE 3
OPT NTSC REC
OPT AVC
D7031
D7032
0
1
2
3

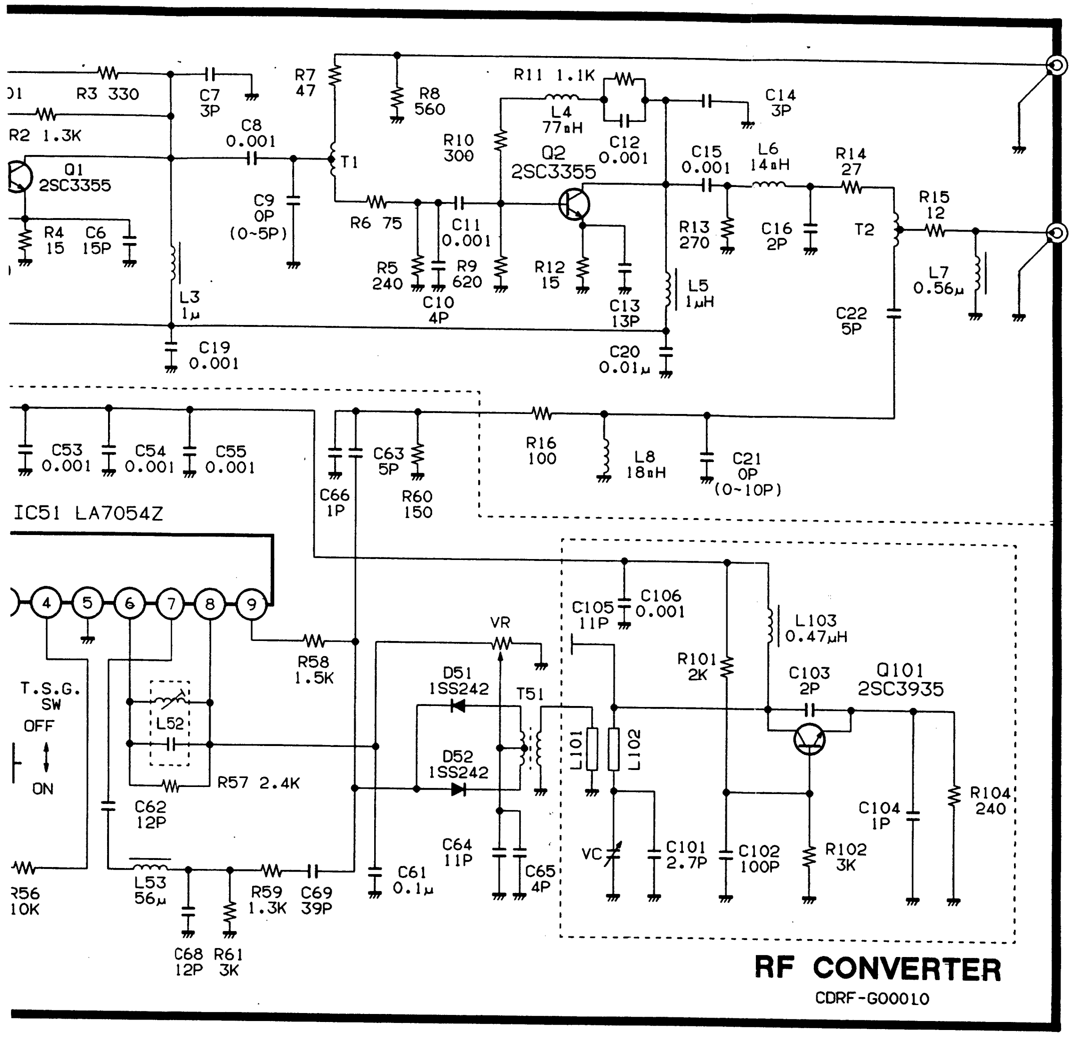


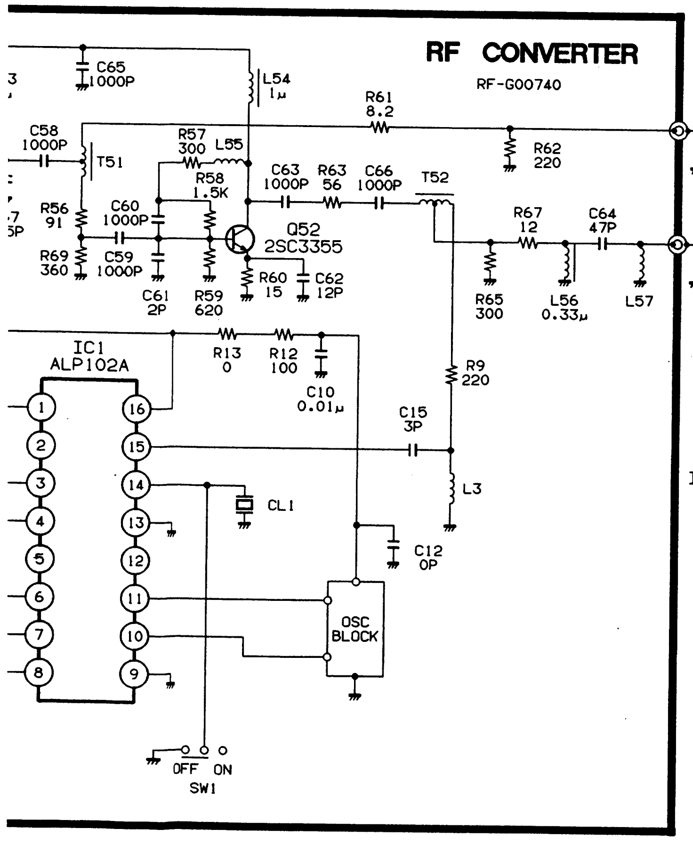
S7152 CONSTRUCTION

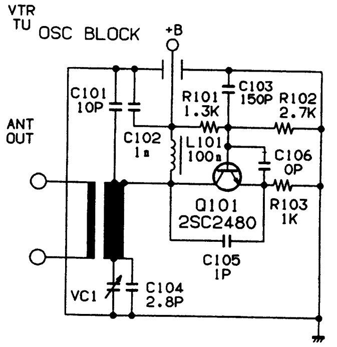


S7121 CONSTRUCTION

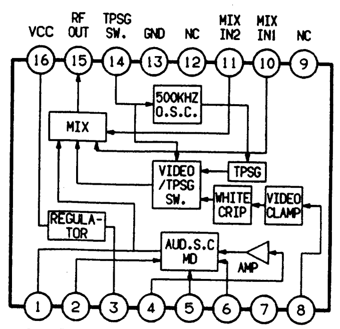
## ONVERTER CIRCUIT DIAGRAM (SLV-X27 ONLY)


TUNER OUT
ANT OUT
R3 330
R2 1.3K
Q1 2SC3355
R4 15
C6 15P
R7 47
R8 560
C7 3P
C8 0.001
C9 0P (0~5P)
T1
R6 75
R11 1.1K
L4 77nH
C12 0.001
R10 300
Q2 2SC3355
C11 0.001
R5 240
R9 620
C10 4P
R12 15
C13 13P
L5 1μH
C14 3P
C15 0.001
L6 14nH
R14 27
R15 12
T2
R13 270
C16 2P
L7 0.56μ
C22 5P
C20 0.01μ
L3 1μ
C19 0.001
C53 0.001
C54 0.001
C55 0.001
C63 5P
C66 1P
R60 150
R16 100
L8 18nH
C21 0P (0~10P)
IC51 LA7054Z
T.S.G. SW
OFF
ON
L52
R57 2.4K
C62 12P
R58 1.5K
VR
D51 1SS242
D52 1SS242
T51
C64 11P
C65 4P
C61 0.1μ
L53 56μ
R59 1.3K
C69 39P
R56 10K
C68 12P
R61 3K
C105 11P
C106 0.001
L103 0.47μH
R101 2K
C103 2P
Q101 2SC3935
L101
L102
VC
C101 2.7P
C102 100P
R102 3K
C104 1P
R104 240
RF CONVERTER
CDRF-G00010

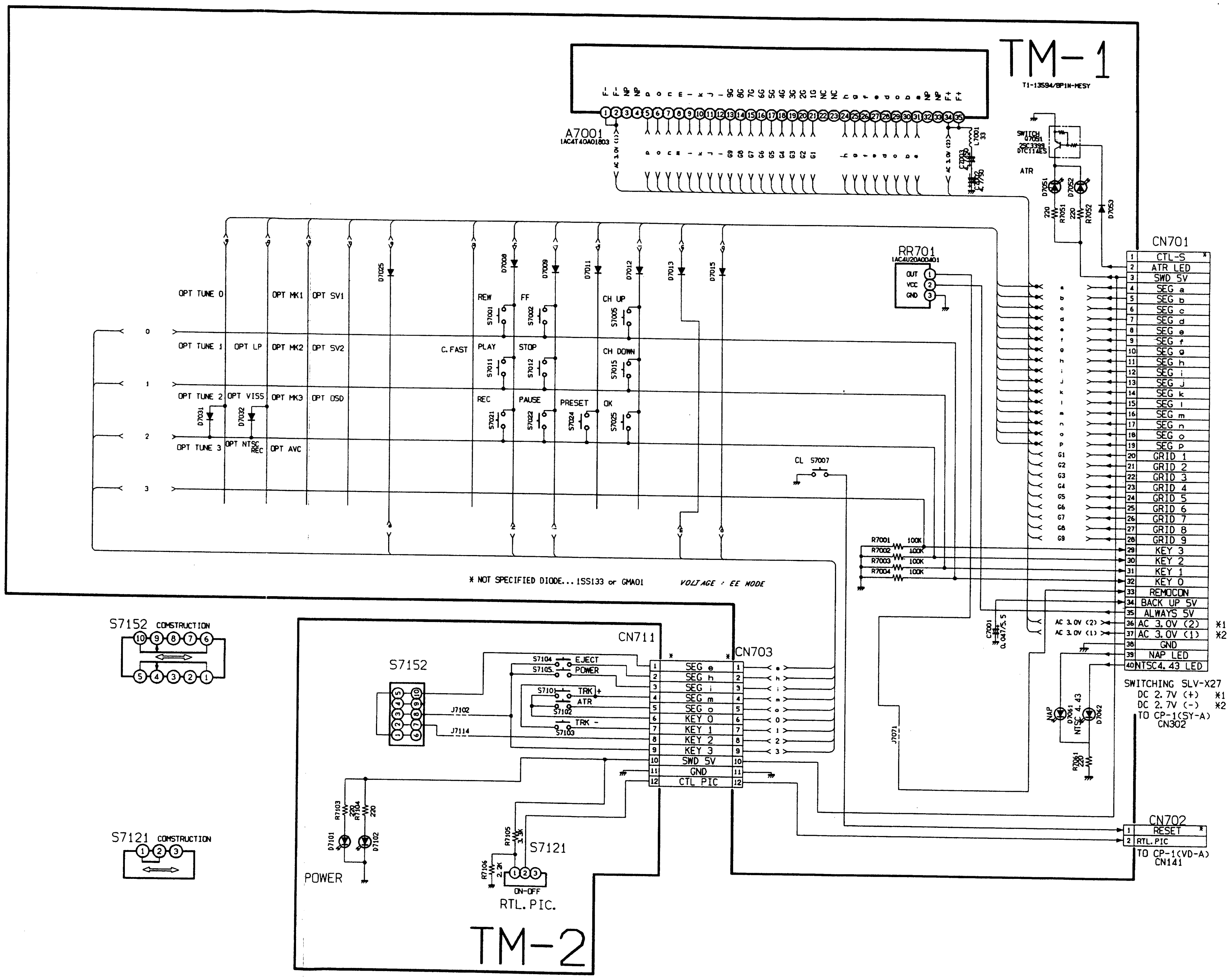

RF CONVERTER
RF-G00740
VTR TU
ANT OUT
C65 1000P
L54 1μ
R61 8.2
R62 220
C58 1000P
T51
R57 300
L55
R58 1.5K
C63 1000P
R63 56
C66 1000P
T52
R56 91
C60 1000P
Q52 2SC3355
R69 360
C59 1000P
R60 15
C62 12P
C61 2P
R59 620
R67 12
C64 47P
R65 300
L56 0.33μ
L57
IC1 ALP102A
R13 0
R12 100
C10 0.01μ
R9 220
C15 3P
L3
CL1
C12 0P
OSC BLOCK
OFF ON
SW1


OSC BLOCK
+B
C101 10P
R101 1.3K
C103 150P
R102 2.7K
C102 1n
L101 100n
C106 0P
Q101 2SC2480
R103 1K
C105 1P
VC1
C104 2.8P

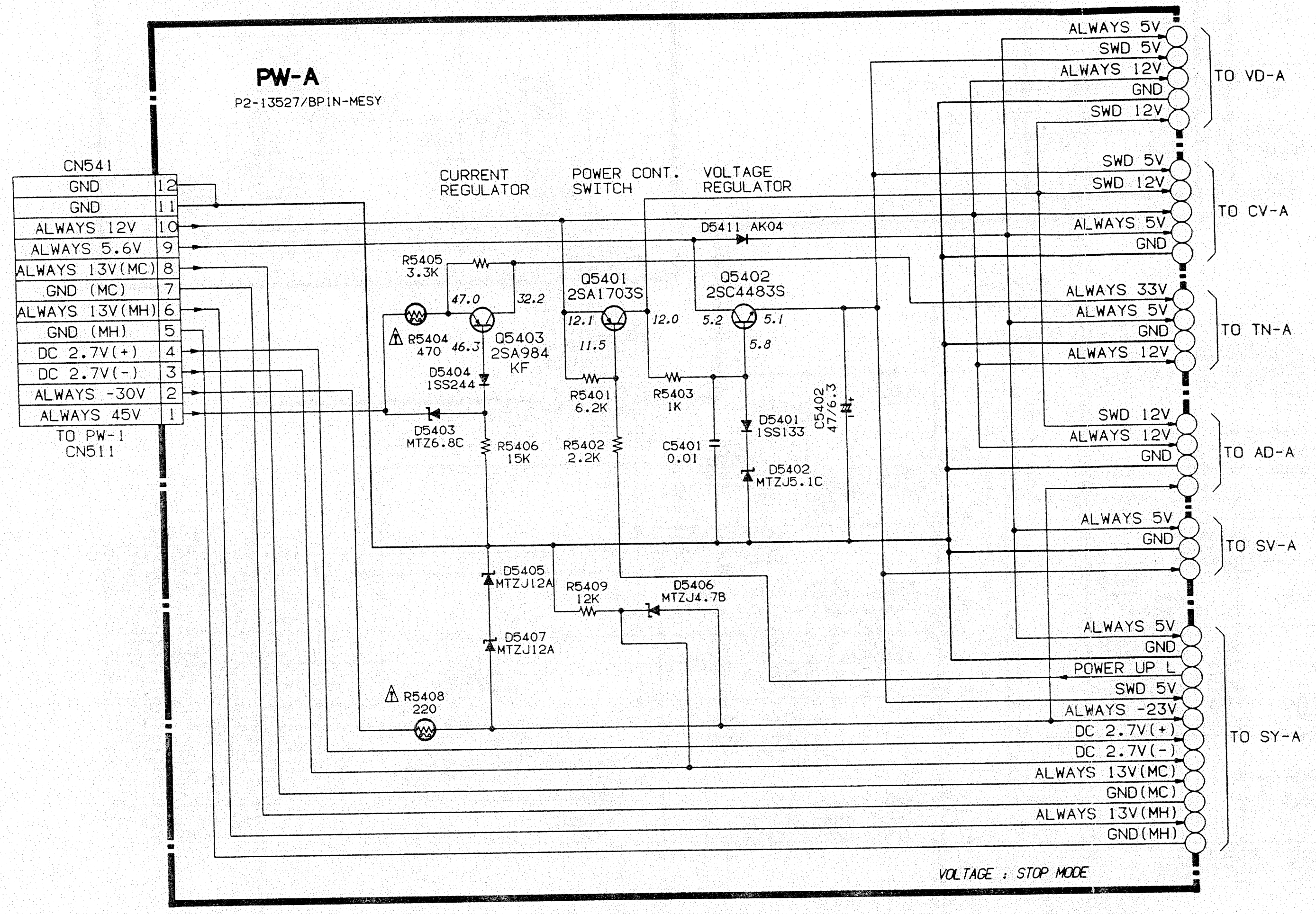
IC1 BLOCK DIAGRAM


VCC
RF OUT
TPSG SW.
GND
NC
MIX IN2
MIX IN1
NC
MIX
500KHZ O.S.C.
VIDEO /TPSG SW.
TPSG
WHITE CRIP
VIDEO CLAMP
REGULA-TOR
AUD.S.C MD
AMP
P/S ADJ.
T1/T2 SW.
REG OUT
AUDIO IN
T1
T2
GND
VIDEO IN

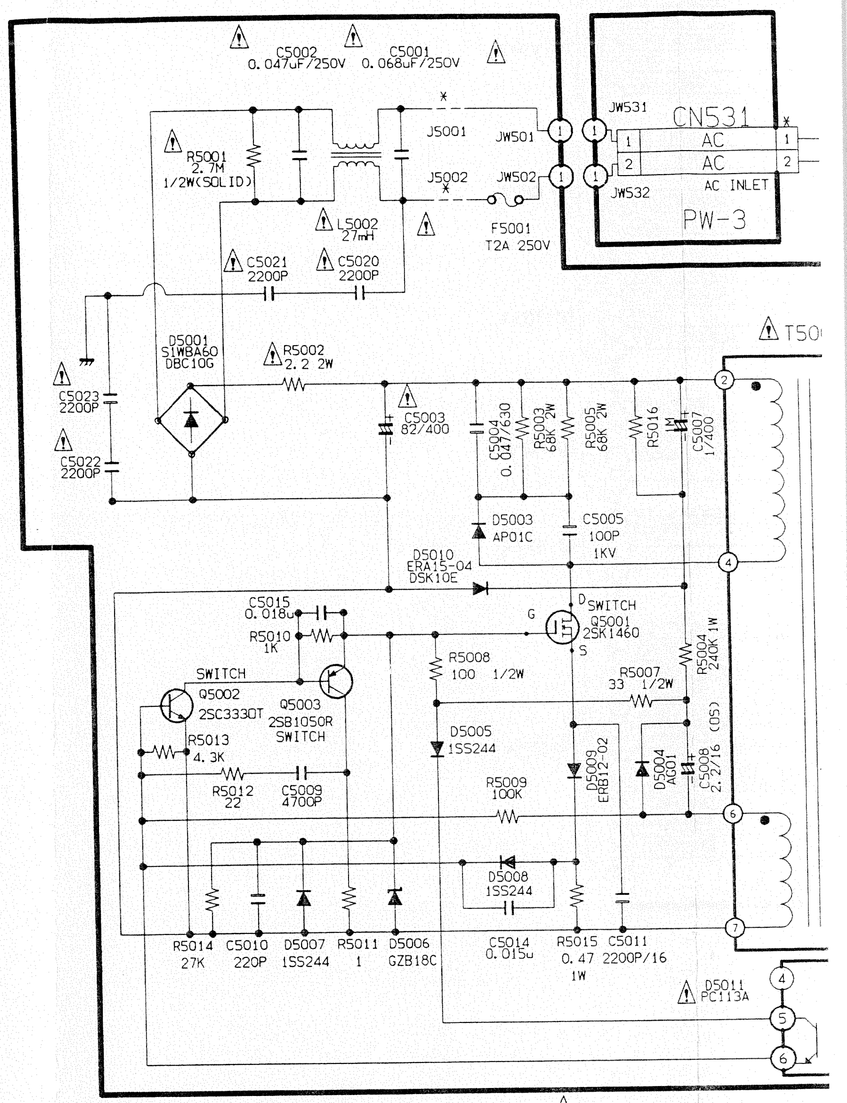
## TM-1, 2 BOARD OPERATION KEY & DISPLAY (FLD) CIRCUIT DIAGRAM (SLV-X27 ONLY)


TM-1
A7001
RR701
OUT
VCC
GND
CN701
1 CTL-S
2 ATR LED
3 SWD 5V
4 SEG a
5 SEG b
6 SEG c
7 SEG d
8 SEG e
9 SEG f
10 SEG g
11 SEG h
12 SEG i
13 SEG j
14 SEG k
15 SEG l
16 SEG m
17 SEG n
18 SEG o
19 SEG p
20 GRID 1
21 GRID 2
22 GRID 3
23 GRID 4
24 GRID 5
25 GRID 6
26 GRID 7
27 GRID 8
28 GRID 9
29 KEY 3
30 KEY 2
31 KEY 1
32 KEY 0
33 REMOCON
34 BACK UP 5V
35 ALWAYS 5V
36 AC 3.0V (2) ※1
37 AC 3.0V (1) ※2
38 GND
39 NAP LED
40 NTSC4.43 LED
SWITCHING SLV-X27
DC 2.7V (+) ※1
DC 2.7V (−) ※2
TO CP-1(SY-A) CN302
OPT TUNE 0
OPT TUNE 1
OPT TUNE 2
OPT TUNE 3
OPT LP
OPT VISS
OPT NTSC REC
OPT MK1
OPT MK2
OPT MK3
OPT AVC
OPT SV1
OPT SV2
OPT O5O
C.FAST
REW
FF
PLAY
STOP
REC
PAUSE
PRESET
OK
CH UP
CH DOWN
CL S7007
R7001 100K
R7002 100K
R7003 100K
R7004 100K
ATR
※ NOT SPECIFIED DIODE...1SS133 or GMA01
VOLTAGE : EE MODE
S7152 CONSTRUCTION
S7121 CONSTRUCTION
TM-2
S7152
CN711
CN703
1 SEG e
2 SEG h
3 SEG i
4 SEG m
5 SEG o
6 KEY 0
7 KEY 1
8 KEY 2
9 KEY 3
10 SWD 5V
11 GND
12 CTL PIC
S7104 EJECT
S7105 POWER
S7101 TRK+
S7102 ATR
S7103 TRK −
J7102
J7114
D7101
D7102
POWER
S7121
ON-OFF
RTL.PIC.
CN702
1 RESET
2 RTL.PIC
TO CP-1(VD-A) CN141
NAP
NTSC4.43

## CP-1 BOARD (PW-A) POWER SUPPLY CIRCUIT DIAGRAM (SLV-X27 ONLY)

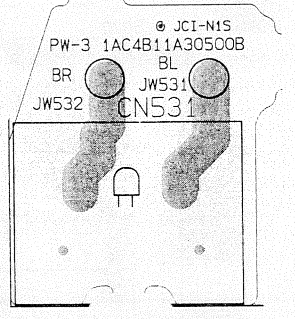

PW-A
P2-13527/BP1N-MESY
CN541
GND 12
GND 11
ALWAYS 12V 10
ALWAYS 5.6V 9
ALWAYS 13V(MC) 8
GND (MC) 7
ALWAYS 13V(MH) 6
GND (MH) 5
DC 2.7V(+) 4
DC 2.7V(-) 3
ALWAYS -30V 2
ALWAYS 45V 1
TO PW-1 CN511
CURRENT REGULATOR
POWER CONT. SWITCH
VOLTAGE REGULATOR
R5405 3.3K
R5404 470
Q5403 2SA984 KF
D5404 1SS244
D5403 MTZ6.8C
R5406 15K
Q5401 2SA1703S
R5401 6.2K
R5402 2.2K
R5403 1K
D5411 AK04
Q5402 2SC4483S
C5401 0.01
D5401 1SS133
D5402 MTZJ5.1C
C5402 47/6.3
D5405 MTZJ12A
R5409 12K
D5406 MTZJ4.7B
D5407 MTZJ12A
R5408 220
47.0
32.2
46.3
12.1
11.5
12.0
5.2
5.1
5.8
ALWAYS 5V
SWD 5V
ALWAYS 12V
GND
SWD 12V
TO VD-A
SWD 5V
SWD 12V
ALWAYS 5V
GND
TO CV-A
ALWAYS 33V
ALWAYS 5V
GND
ALWAYS 12V
TO TN-A
SWD 12V
ALWAYS 12V
GND
TO AD-A
ALWAYS 5V
GND
TO SV-A
ALWAYS 5V
GND
POWER UP L
SWD 5V
ALWAYS -23V
DC 2.7V(+)
DC 2.7V(-)
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
TO SY-A
VOLTAGE : STOP MODE

## PW-1, 2, 3 BOARD POWER SUP

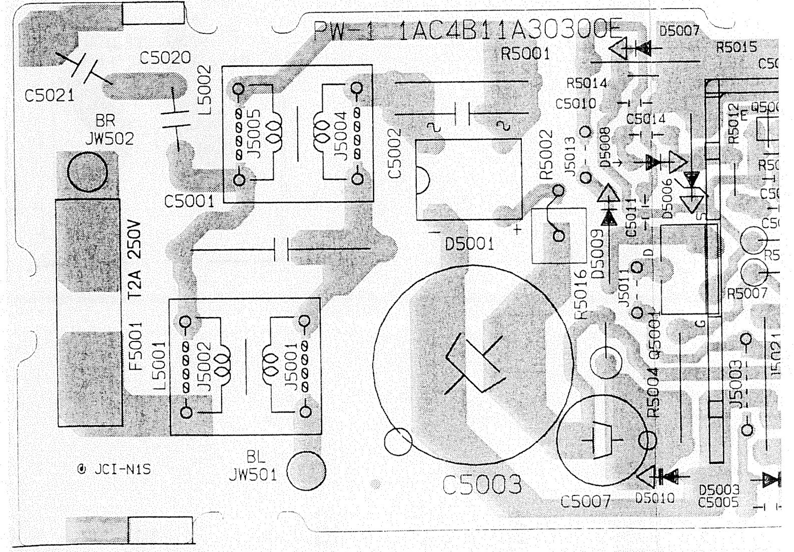

C5002 0.047uF/250V
C5001 0.068uF/250V
R5001 2.7M 1/2W(SOLID)
J5001
J5002
JW501
JW502
JW531
JW532
CN531
AC
AC
AC INLET
PW-3
L5002 27mH
F5001 T2A 250V
C5021 2200P
C5020 2200P
C5023 2200P
C5022 2200P
D5001 S1WBA60 D8C10G
R5002 2.2 2W
C5003 82/400
C5004 0.047/630
R5003 68K 2W
R5005 68K 2W
R5016
C5007 1/400
T50
D5003 AP01C
C5005 100P 1KV
D5010 ERA15-04 DSK10E
C5015 0.018u
R5010 1K
SWITCH Q5001 2SK1460
R5008 100 1/2W
R5004 240K 1W
R5007 33 1/2W
SWITCH
Q5002 2SC3330T
Q5003 2SB1050R SWITCH
R5013 4.3K
R5012 22
C5009 4700P
D5005 1SS244
R5009 100K
D5009 ERB12-02
D5004 AD01
C5008 2.2/16 (C05)
D5008 1SS244
R5014 27K
C5010 220P
D5007 1SS244
R5011 1
D5006 GZB18C
C5014 0.015u
R5015 0.47 1W
C5011 2200P/16
D5011 PC113A

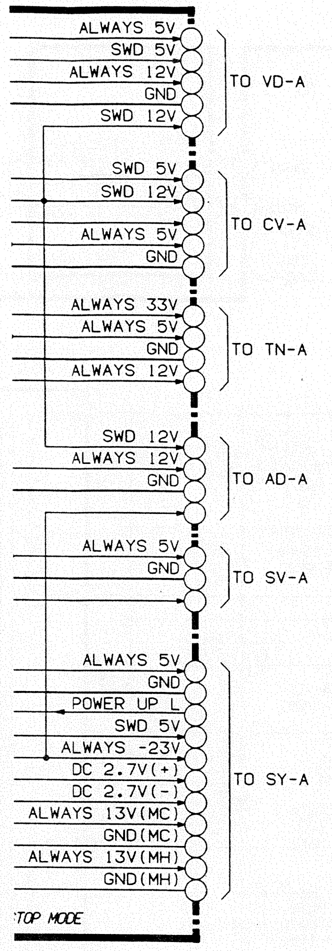
[NOTE] 1. The components indentified by shading and mark ⚠ are critical for safety.
Replace only with Part number specified.

## PW-3 P. C. B.

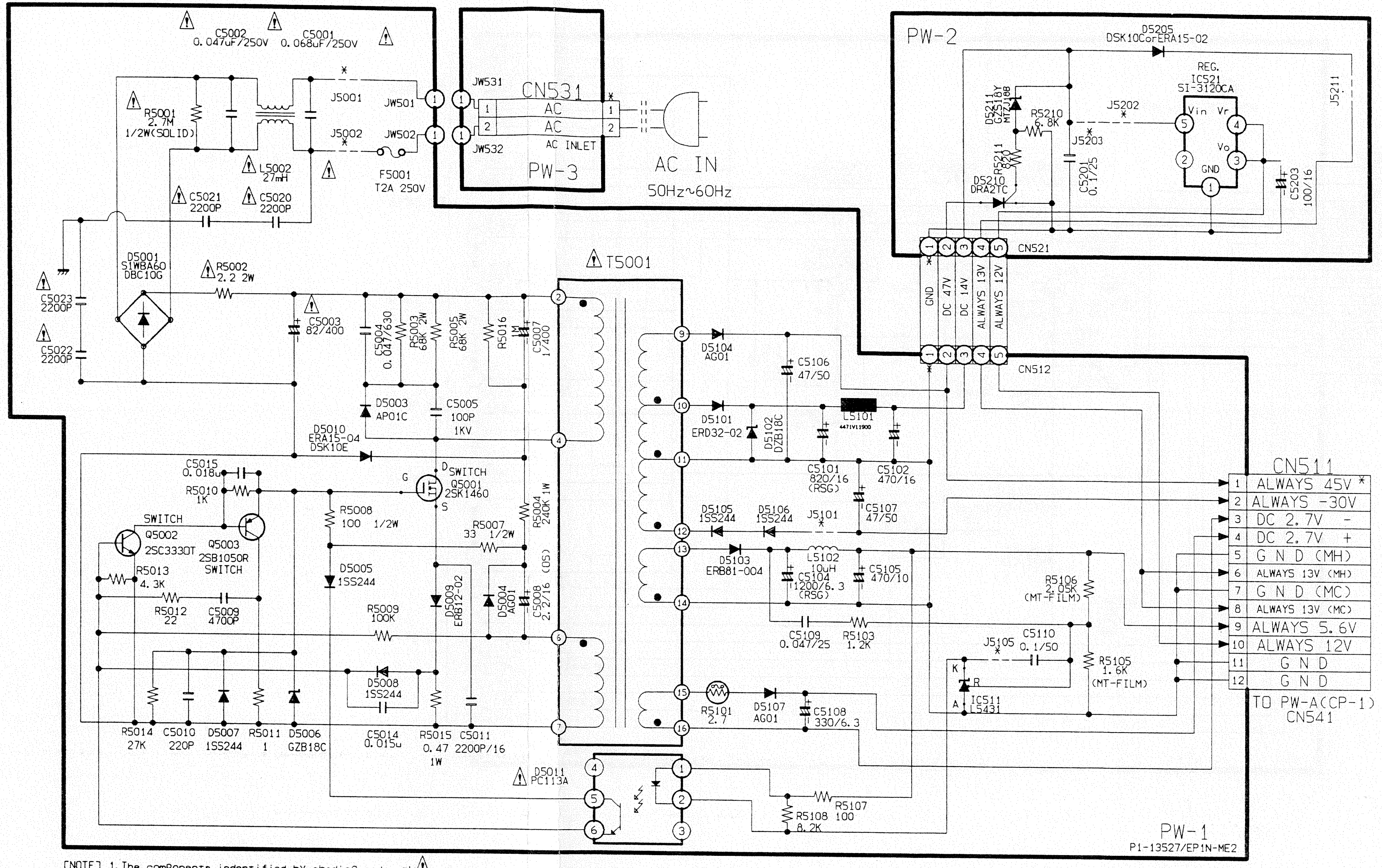

JCI-N1S
PW-3 1AC4B11A30500B
BR
BL
JW531
JW532
CN531

## PW-1


PW-1 1AC4B11A30300E
D5007
R5001
R5015
C5020
C5021
L5002
BR
JW502
J5005
J5004
C5002
R5002
R5014
C5010
C5014
J5013
D5008
C5001
D5001
F5001 T2A 250V
L5001
J5002
J5001
R5016
R5004
D5009
C5011
J5011
Q5001
R5012
R5007
JCI-N1S
BL
JW501
C5003
C5007
D5010
D5003
C5005

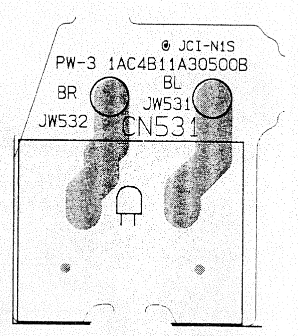

ALWAYS 5V
SWD 5V
ALWAYS 12V
GND
SWD 12V
TO VD-A
SWD 5V
SWD 12V
ALWAYS 5V
GND
TO CV-A
ALWAYS 33V
ALWAYS 5V
GND
ALWAYS 12V
TO TN-A
SWD 12V
ALWAYS 12V
GND
TO AD-A
ALWAYS 5V
GND
TO SV-A
ALWAYS 5V
GND
POWER UP L
SWD 5V
ALWAYS -23V
DC 2.7V(+)
DC 2.7V(-)
ALWAYS 13V(MC)
GND(MC)
ALWAYS 13V(MH)
GND(MH)
TO SY-A
STOP MODE

## PW-1, 2, 3 BOARD POWER SUPPLY CIRCUIT DIAGRAM (SLV-X27 ONLY)

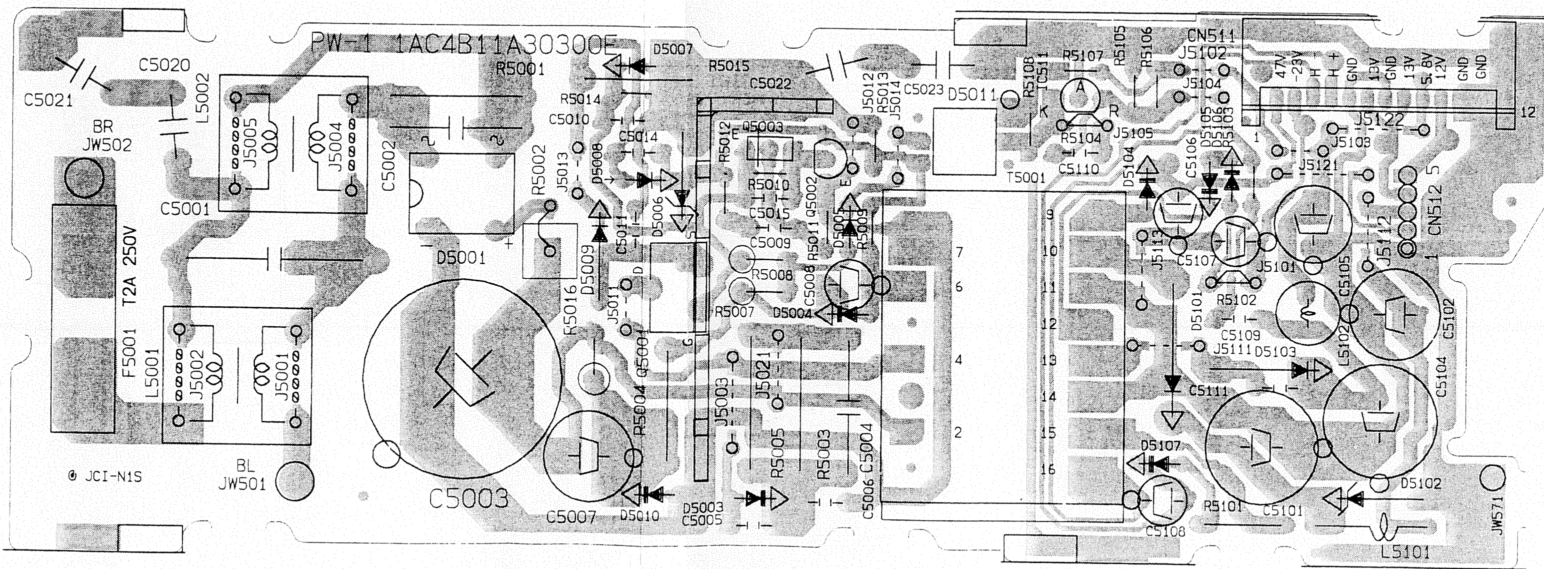

C5002 0.047uF/250V
C5001 0.068uF/250V
R5001 2.7M 1/2W(SOLID)
J5001
J5002
JW501
JW502
L5002 27mH
F5001 T2A 250V
C5021 2200P
C5020 2200P
JW531
JW532
CN531
AC
AC INLET
PW-3
AC IN
50Hz~60Hz
C5023 2200P
C5022 2200P
D5001 S1WBA60 D8C10G
R5002 2.2 2W
C5003 82/400
C5004 0.047/630
R5003 68K 2W
R5005 68K 2W
R5016 1M
C5007 1/400
T5001
D5003 AP01C
C5005 100P 1KV
D5010 ERA15-04 DSK10E
C5015 0.018u
R5010 1K
SWITCH
Q5001 2SK1460
SWITCH
Q5002 2SC3330T
Q5003 2SB1050R SWITCH
R5013 4.3K
R5012 22
C5009 4700P
R5008 100 1/2W
R5007 33 1/2W
R5004 240K 1W
D5005 1SS244
R5009 100K
D5009 ERB12-02
D5004 AG01
C5008 2.2/16 (OS)
D5008 1SS244
R5014 27K
C5010 220P
D5007 1SS244
R5011 1
D5006 GZB18C
C5014 0.015u
R5015 0.47 1W
C5011 2200P/16
D5011 PC113A
D5104 AG01
C5106 47/50
D5101 ERD32-02
D5102 DZB18C
L5101
C5101 820/16 (RSG)
C5102 470/16
D5105 1SS244
D5106 1SS244
J5101
C5107 47/50
D5103 ERB81-004
L5102 10uH
C5104 1200/6.3 (RSG)
C5105 470/10
C5109 0.047/25
R5103 1.2K
R5106 2.05K (MT-FILM)
J5105
C5110 0.1/50
R5105 1.6K (MT-FILM)
IC5511 LS431
R5101 2.7
D5107 AG01
C5108 330/6.3
R5107
R5108 100 8.2K
PW-1
P1-13527/EP1N-ME2
PW-2
D5205 DSK10CorERA15-02
REG. IC5211 SI-3120CA
Vin Vr
Vo
GND
J5211
D5211 GZB10Y MTZJ9B
R5210 6.8K
J5202
J5203
R5211 820
D5210 DRA21C
C5201 0.1/25
C5203 100/16
CN521
GND
DC 47V
DC 14V
ALWAYS 13V
ALWAYS 12V
CN512
CN511
ALWAYS 45V
ALWAYS -30V
DC 2.7V -
DC 2.7V +
GND (MH)
ALWAYS 13V (MH)
GND (MC)
ALWAYS 13V (MC)
ALWAYS 5.6V
ALWAYS 12V
GND
GND
TO PW-A(CP-1) CN541

[NOTE] 1. The components indentified by shading and mark⚠ are critical for safety.
Replace only with Part number specified.

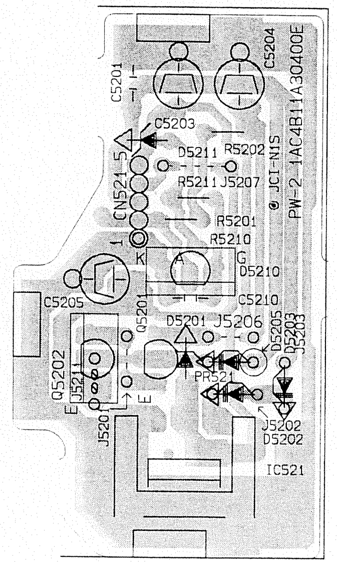
### PW-3 P. C. B.


JCI-N1S
PW-3 1AC4B11A30500B
BR
BL
JW531
JW532
CN531

### PW-1 P. C. B.

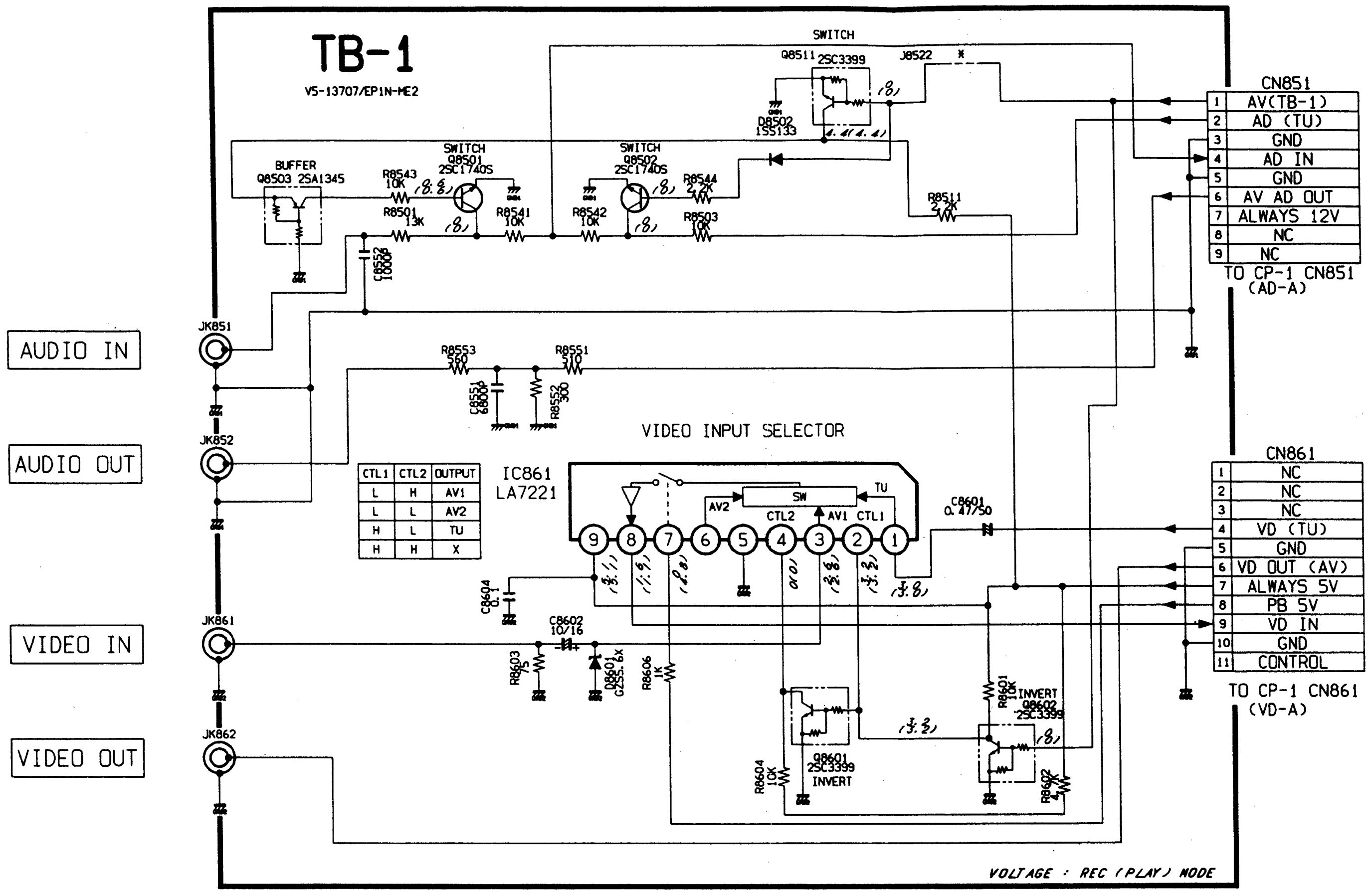

PW-1 1AC4B11A30300E
C5021
C5020
L5002
BR JW502
C5001
J5005
J5004
C5002
D5001
F5001 T2A 250V
L5001
J5002
J5001
JCI-N1S
BL JW501
C5003
C5007
D5010
D5003 C5005
R5001
R5002
R5016
D5007
R5015
R5014
C5010
C5014
C5022
C5023
D5011
T5001
CN511
CN512
C5101
L5101
C5102
C5104
C5105
C5106
C5107
C5108
JW571

### PW-2 P. C. B.


C5201
C5204
C5203
D5211
R5202
R5211
J5207
CN521
JCI-N1S
PW-2 1AC4B11A30400E
R5201
R5210
D5210
C5205
C5210
D5201
J5206
D5205
D5203
Q5202
J5201
J5202
D5202
IC521

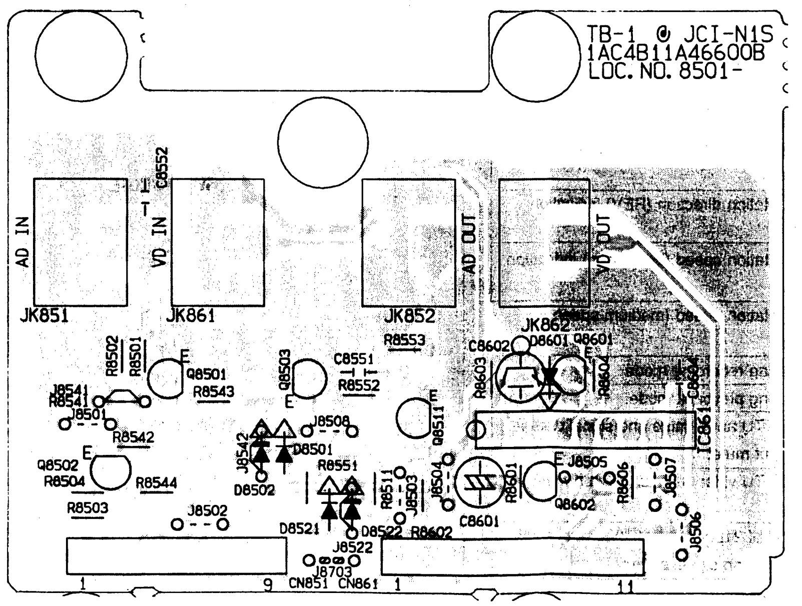
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

## TB-1 BOARD TERMINAL CIRCUIT DIAGRAM (SLV-X27 ONLY)



TB-1
VS-13707/EP1N-ME2
AUDIO IN
AUDIO OUT
VIDEO IN
VIDEO OUT
JK851
JK852
JK861
JK862
BUFFER
Q8503 2SA1345
SWITCH
Q8501
2SC1740S
SWITCH
Q8502
2SC1740S
SWITCH
Q8511 2SC3399
D8502
1SS133
J8522
R8543 10K
R8501 13K
R8541 10K
R8542 10K
R8544 2.2K
R8503 10K
R8511 2.2K
C8552 1000P
R8553 560
R8551 510
C8551 6800P
R8552 300
VIDEO INPUT SELECTOR
IC861
LA7221
CTL1 CTL2 OUTPUT
L H AV1
L L AV2
H L TU
H H X
SW
AV2
AV1
TU
CTL1
CTL2
C8601 0.47/50
C8604 0.1
C8602 10/16
R8603 75
D8601 GZS5.6X
R8606 1K
R8604 10K
Q8601 2SC3399 INVERT
R8601 10K
INVERT Q8602 2SC3399
R8602 4.7K
CN851
1 AV(TB-1)
2 AD (TU)
3 GND
4 AD IN
5 GND
6 AV AD OUT
7 ALWAYS 12V
8 NC
9 NC
TO CP-1 CN851 (AD-A)
CN861
1 NC
2 NC
3 NC
4 VD (TU)
5 GND
6 VD OUT (AV)
7 ALWAYS 5V
8 PB 5V
9 VD IN
10 GND
11 CONTROL
TO CP-1 CN861 (VD-A)
VOLTAGE : REC (PLAY) MODE

## TB-1 P. C. B.



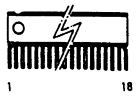
TB-1 @ JCI-N1S
1AC4B11A46600B
LOC. NO. 8501-
AD IN
VD IN
AD OUT
VD OUT
C8552
JK851
JK861
JK852
JK862
R8502
R8501
Q8501
R8543
Q8503
C8551
R8553
R8552
J8541
R8541
J8501
R8542
J8508
D8501
R8551
Q8511
Q8502
R8504
R8544
R8503
J8502
J8542
D8502
D8521
D8522
J8522
J8703
R8511
J8503
J8504
R8602
C8602
D8601
Q8601
R8603
R8601
J8505
Q8602
C8601
R8606
J8507
J8506
1
9
CN851
CN861
1
11

# IC301 SYSTEM CONTROL/TIMER/TUNING CONTROL MPU PIN FUNCTIONS TABLE

| No. | Name | I/O | I/O Signal Function |
|---|---|---|---|
| 1 | S - PLAY | O | Signal for indicating CUE , REV , STILL and SLOW modes. |
| 2 | 4k - PWM | O | Output 4kHz PWM signal for set period at start of high-speed FF / REW. ( For 2 Haed model ) |
|  | CAP P. | O | Gain down control for Head Motor Amplifier at SLOW mode. ( For 4 Head model ) |
| 3 | DRUM UP | O | Head drum motor rotation speed - up signal. |
| 4 | SS + DRUM SHIFT | O | Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage) |
| 5 | MC - BR | O | Brake signal for capstan motor. |
| 6 | C - Vs CUT | O | Cut off for capstan motor control voltage when SLOW / STILL modes. |
| 7 | 0 / 1 DATA | I | CTL pulse duty detection signal input. Used for VISS detection. |
| 8 | - | - | - |
| 9 | - | - | - |
| 10 | FL- START SW | I | Switch input indicating start of cassette loading or discharge by cassette mechanism. |
| 11 | - | - | - |
| 12 | RESET | I | Initial reset terminal for this IC. |
| 13 | XT1 | - | Clock OSC for when power failure condition.<br>Frequency is 32.672kHz. |
| 14 | XT2 | - |  |
| 15 | VSS | - | Ground terminal |
| 16 | CF1 | - | IC clock OSC terminal.<br>Frequency is 13.92MHz. |
| 17 | CF2 | - |  |
| 18 | VDD | - | IC power supply terminal.(5Vdc) |
| 19 | T. END S. | I | Sensor signal input for tape end detection. |
| 20 | T. TOR S. | I | Sensor signal input for tape beginning detection. |
| 21 | - | - | - |
| 22 | POWER DOWN | I | Power failure detection terminal. |
| 23 | TAPE SPEED | I | Input of result of tape speed discrimination by digital servo IC. |
| 24 | AFT- C | I | Tuner AFT s-curve signal input for tuner AFT function. |
| 25 | ENV. | I | Video head envelope detection signal input for ATR function. |
| 26 | T. REEL P. | I | Pulse input for detection of take-up reel table rotation. |
| 27 | CTL P. | I | CTL head recording / playback pulse signal input. |
| 28 | C - FG P. | I | FG signal input of capstan motor. |
| 29 | RF SW P. | I | Input of RF switching pulse created by head drum PG. |
| 30 | REMOCON | I | Remote control signal input. |
| 31 | AFT MUTE | O | "H" output during TU AFT mute. (V-syn model only) |
| 32 | - | - | - |
| 33 | - | - | - |
| 34 | NTSC 4.43 | O | " H " output during NTSC 4.43 playback mode. |
| 35 | PAL LED | O | Signal for PAL indicator LED drive. |
| 36 | NTSC 4.43 LED | O | Signal for NTSC4.43 indicator LED drive. |
| 37 | NAP LED | O | Signal for NAP indicator LED drive. |
| 38 | G9 | O | Display grid outputs (FLD). |
| 39 | G8 | O |  |
| 40 | G7 | O |  |
| 41 | G6 | O |  |
| 42 | G5 | O |  |
| 43 | G4 | O |  |
| 44 | G3 | O |  |
| 45 | G2 | O |  |
| 46 | G1 | O |  |
| 47 | VDD | - | IC power supply input.(5Vdc) |
| 48 | V LOAD | O | -30V input for FLD drive. |
| 49 | SEG p | O | Display segment outputs (FLD).<br>(Included key-scan output) |
| 50 | SEG o | O |  |
| 51 | SEG n | O |  |
| 52 | SEG m | O |  |
| 53 | SEG l | O | Display segment outputs (FLD).<br>(Inclded key-scan output) |
| 54 | SEG k | O |  |
| 55 | SEG j | O |  |
| 56 | SEG i | O |  |
| 57 | SEG h | O |  |
| 58 | SEG g | O |  |
| 59 | SEG f | O |  |
| 60 | SEG e | O |  |
| 61 | SEG d | O |  |
| 62 | SEG c | O |  |
| 63 | SEG b | O |  |
| 64 | SEG a | O |  |
| 65 | KEY IN 0 | I | Operation key data inputs. |
| 66 | KEY IN 1 | I |  |
| 67 | KEY IN 2 | I |  |
| 68 | KEY IN 3 | I |  |
| 69 | SW DATA 0 | I | 3-bit data indicating operation position of mechanism. |
| 70 | SW DATA 1 | I |  |
| 71 | SW DATA 2 | I |  |
| 72 | SAFETY SW | I | Input terminal for accidental erasur prevention switch. No operation to recording mode while "LOW" is input. |
| 73 | SV S. DATA | O | Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC. |
| 74 | OSD CS | O | Chip enable (access) signsl output to OSD IC. |
| 75 | SV S CLK | O | The clock pulse for digital servo IC. |
| 76 | COMMON DATA | I/O | Terminal for communication of respective data with OSD IC , tuning PLL IC and CH+ control IC. |
| 77 | I2C SDA | I/O | Data exchange with the VPS decoder IC. |
| 78 | COMMON CLK | O | The clock pulse for OSD IC , PLL IC and VPS IC. |
| 79 | ATR LED | O | Signal for ATR indicator LED drive. |
| 80 | PLL CS | O | Chip enable signal output to PLL tuning system IC. (F-syn model) |
|  | PWM | O | Tuning voltage output (PWM signal). ( V-syn model ) |
| 81 | H SYNC (LEVEL) | I | Sync. detecton signal input for existing channel discrimination. |
| 82 | 50 / 60 | O | " LOW " output during NAP or NTSC4.43 of playback modes. ( 60 field mode ) |
| 83 | BAND 1 | O | Tuning band data output(BAND1,BAND2).<br>(L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (V-syn model only) |
| 84 | BAND 2 | O |  |
| 85 | CH PLUS CLK | O | The clock pulse for CH+ input/output selection IC. |
| 86 | - | - | - |
| 87 | - | - | - |
| 88 | INPUT SEL. | O | Signal for selecting video/audio input signal. |
| 89 | VSS | - | IC ground terminal. |
| 90 | VDD | - | IC power supply input.(5Vdc) |
| 91 | ML- F | O | Loading motor rotation direction (FWD) indication signal. |
| 92 | ML- R | O | Loading motor rotation direction (REV) indication signal. |
| 93 | ML- L | O | Loading motor rotation speed (low speed) indication signal. |
| 94 | ML- M | O | Loading motor rotation speed (medium speed) indication signal. |
| 95 | REC H | O | Signal for indicating recording mode. |
| 96 | PB H | O | Signal for indicating playback mode. |
| 97 | TU A MUTE + A MUTE | O | "H" output during TU audio mute and signal disable audio signal output mute. |
| 98 | V MUTE + OFF MUTE | O | "H" output during TU video mute and video mute during power off. |
| 99 | AV CTL or ANT/ VTR | O | AV terminal (pin8 of 21pin AV socket) control signal or ANT / VTR selection signal output. |
| 100 | POWER UP | O | "HIGH" output except when power is off. Indicating that power is ON. |

## SEMICONDUCTOR LEAD LAYOUTS

**BA7025L**



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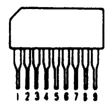
**LA7910**



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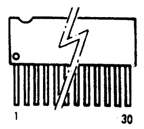

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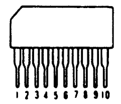

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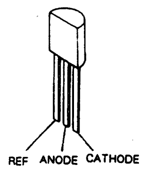

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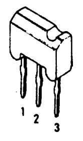

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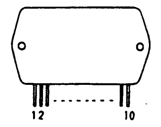
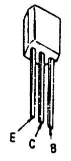


**DTA114ES**
**DTA144ES**
**DTC114ES**
**DTC124ES**
**DTC144ES**
**2SC2668**



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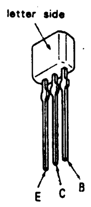
**2SC2785-HFE**



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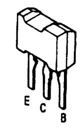
**2SC3668-Y**



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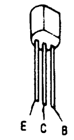
**2SD734-E**
**2SD1468S-S**
**KSA708**



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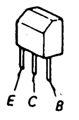

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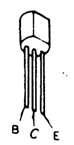

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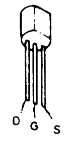
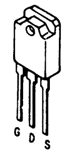
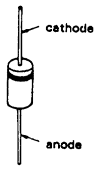


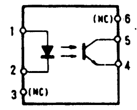
**2SK1460-YA**



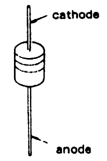
**AG01-V2**
**AK04-V2**
**APOIC-V0**
**DSK10E-BT**
**EM-1Z**
**FDH300**
**GZB18C**
**1SS83**
**10E2**



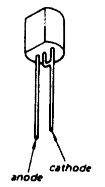
**PC113A**



**MTZJ-7.5B**
**RB441Q**
**RD12ES-B2**
**RD18ES-B2**
**RD24ES-B3**
**RD5.6ES-B2**
**RD6.2ES-B2**
**RD8.2ES-B2**
**RD9.1ES-B2**
**1SS119**



**µPC574J**



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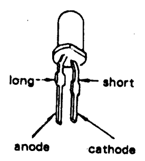
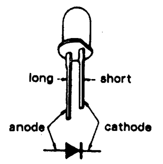


**MPG3868S-J85K-E**



# SECTION 5
# MECHANISM SERVICE TECHNICAL INFORMATIONS

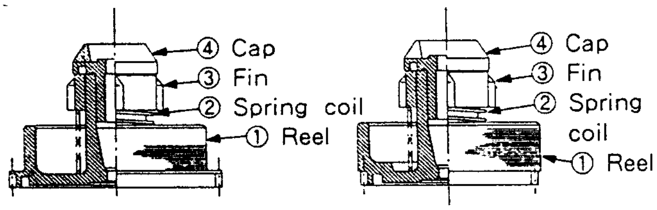
## 1. OUTLINE OF P92 MECHANISM

P92 mechanism is used for video tape recorders shipped as new product of 1992.
The P92 mechanism has the same basic structures as the P90 mechanism shipped in 1990 except below contents. As this manual omits the description of the same contents with P90, please refer to the P90 Mechanism Service Technical Information.

**Note:** (8) to (10) of the followings have been already changed in "P91 mechanism" and repeated in " SUPPLEMENT of P91 mechanism".

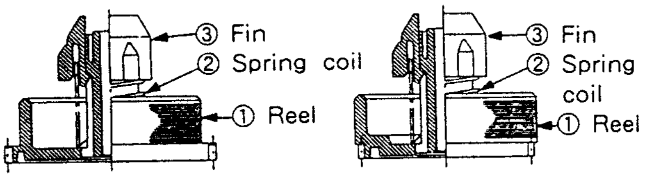
(1) The five components of the reel drive system, supply reel table, take up reel table, reel gear (S), reel gear (T) and COMPL idler clutch, are replaced with those of new one to prevent picture-shifting in the R-search.

As shown in the figure 1-a and 1-b, there are two types of the supply reel table and take up reel table used for the model produced in 1992. One is an old reel table with a cap and fin in the figure 1-a, and the other is a new reel table of monolithic construction without a cap in the figure 1-b.
The colour of the new supply reel table and take up reel table are different from the old ones for identification. The colours of the new and old reel tables are described in the table 1 below.



SUPPLY REEL TABLE TAKE UP REEL TABLE

**Fig. 1-a Old**



SUPPLY REEL TABLE TAKE UP REEL TABLE

**Fig. 1-b New**

**Note:** Five parts of the reel driving system are the supply reel table, take up reel table, reel gear (S), reel gear (T) and COMPL idler clutch.

| | Mechanism | Supply Reel Table | | | Take up Reel Table | | | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | ① | ③ | ④ | ① | ③ | ④ | |
| A | Old reel of P92 mechanism | Light Blue | Black | White | Light Blue | White | White | A is interchangeable with B and C, if changing the entire 5 components of the reel drive system. In other cases, it has no interchangeability. |
| | New reel of P92 mechanism | White | Light Blue | – | White | Green | – | |
| B | Old reel of P88, P89, P90 and P91 mechanism | White | White | White | White | White | White | B cannot be used for A and B. |
| | New reel of P88, P89, P90 and P91 mechanism | White | Black | – | White | White | – | |
| C | Old reel of P90 S-VHS mechanism | Gray | Black | White | Gray | White | White | C is interchangeable with A, if changing the entire 5 components of the reel drive system. In other cases, it has no interchangeability. |

Refer to the figure 1-a and 1-b for No.①,③ and ④.
The old and new are discriminated by the colour of ① reel, ③ fin and ④ cap.

**Table 1**

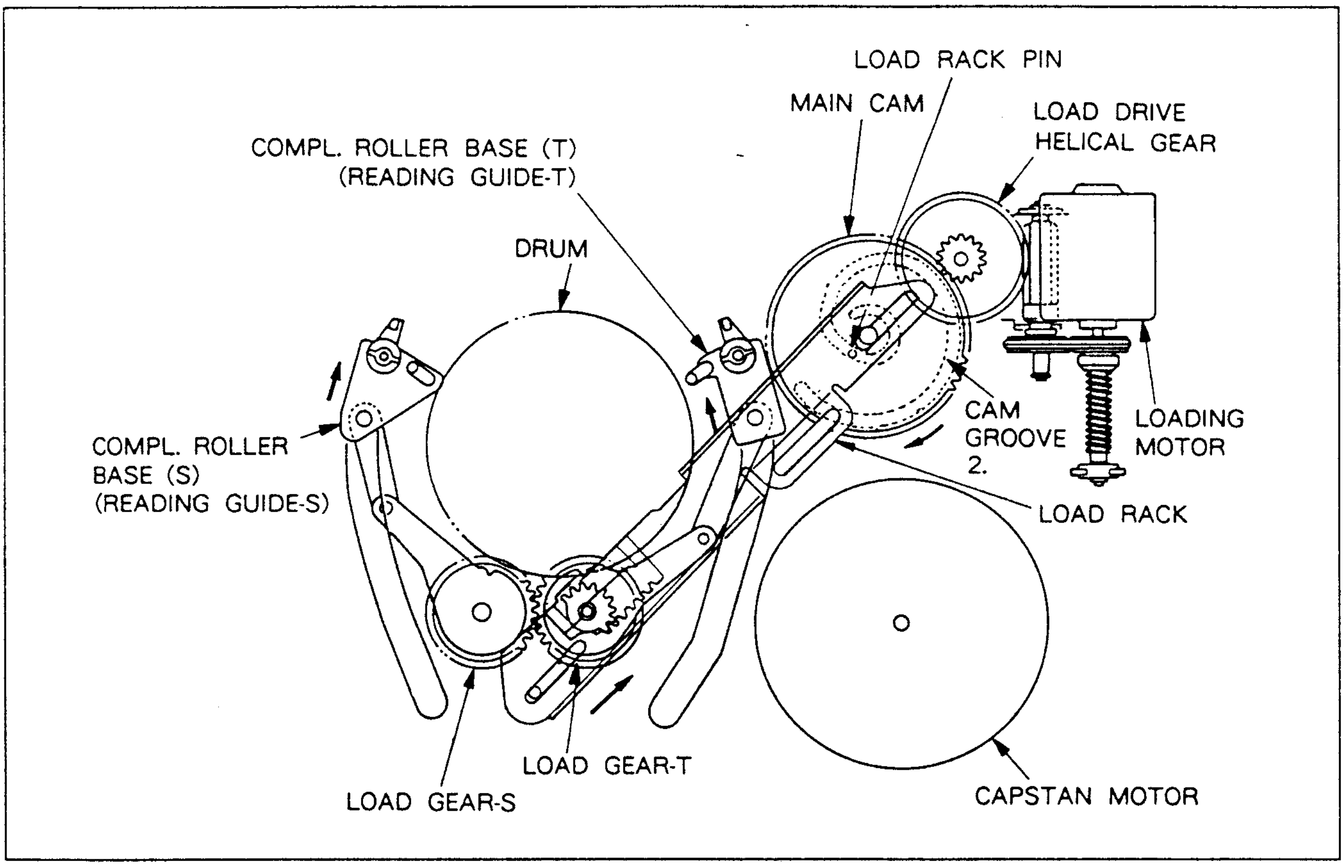

LOAD RACK PIN
MAIN CAM
LOAD DRIVE HELICAL GEAR
COMPL. ROLLER BASE (T) (READING GUIDE-T)
DRUM
COMPL. ROLLER BASE (S) (READING GUIDE-S)
CAM GROOVE 2.
LOADING MOTOR
LOAD RACK
LOAD GEAR-T
LOAD GEAR-S
CAPSTAN MOTOR

**Fig. 2-1 CONSTRUCTION OF TAPE LOADING MECHANISM**

(2) The main cam gear, load rack COMPL and load (T) are replaced with new ones to more simplify the tape loading mechanism. Therefore, the load cam lever of the old mechanism is not required. The new tape loading mechanism is shown in the figure 2-1.

(3) In compact size model (width : 360mm), the MC-2 and MC-3 boards between the loading motor and system control circuit are replaced with new ones. Therefore, a relay board (VHJ-0089) is required for using the service tool mode selector (VHJ-0050). The new MC-2 board has the connectors of CN817 (6 Pin type) and CN818 (2 Pin type) at the both sides of the CN811, and is marked "92" with large letters. The MC-2 board is mounted with one mechanical screw. As for the mid mount model, the same relay board (VHJ-0075) as P90 mechanism is used.

(4) The pulley bracket is disused and the special screw is employed. [However, the pulley bracket is used to S VHS mechanism (High speed FF/REW mechanism)]

(5) The shape of the clutch lever assembly is partially changed and the damper is disused.

(6) The shape of the front helical gear of the loading motor is partially changed and the washer is disused.

(7) The 4 screws for mounting the gear bracket assembly of the COMPL cassette mechanism are changed to 3 screws.

(8) The height adjustment of the exit side fixed guide is unnecessary by improvement in precision of the tape running system.

(9) The form of MC-1 and MC-4 board connector (CN801) near the reel drive part are changed.

(10) Auto head cleaner mechanism is used for cleaning video head automatically when loading and unloading.

Service Jigs No.
Mode selector (VHJ-0050): J-6082-050-A
Mode selector relay board (VHJ-0075): J-6090-008-A
Mode selector relay board (VHJ-0089): J-

# 2. DESCRIPTION OF MECHANISM OPERATION

## 2-1. BASIC OPERATION MODE OF MECHANISM

The P-90 mechanism has its original modes such as given in Table 2-1, in addition to the VTR is operation modes (STOP, FF, REW, PLAY, REC, R-SEARCH, F-SEARCH, STILL, SLOW, and ETS). These modes specific to the mechanism play important roles in tape protection operation at the time of a shift to various modes of the VTR above. A shift to the mode specific to the mechanism is carried out by controlling the rotation of the loading motor with the control signal of the system control circuit. The detection of important mechanism operation mode positions is done by using the FL START SWITCH for detecting the cassette ejection/insertion, and the MECHANISM MODE SWITCH for detecting each mode of the mechanism (3 bit MODE DATA is output by operating the rotary switch).

| Mechanism Mode | Mechanism Mode Switch 3 | 2 | 1 | HEX DATA | Function | VTR Operation Mode |
|---|---|---|---|---|---|---|
| EJECT | - | - | - | | Eject position | EJECT |
| | | | | | Front loading/Unloading | |
| SHORT REW | 1 | 1 | 0 | | Take up operation in the tape end position | Low side of ⑥. Sensed upon IN |
| INITIAL | 1 | 1 | 1 | ⑦ | Power off position | Power off when tape is loaded completely |
| | | | | | Tape unloading position<br>Tape loading<br>Tape loading ending position | |
| BRAKE | 0 | 0 | 1 | ① | Main brake applying position | |
| STOP / FF/REW | 0 | 1 | 0 | ② | STOP waiting and FF/REW (the head motor rotation) | STOP, FF/REW |
| STILL | 0 | 1 | 1 | ③ | The positions of STILL, SLOW or F-ADV. | STILL, SLOW, F-ADV |
| PLAY | 1 | 0 | 0 | ④ | From FWD direction Normal running mode | PLAY, REC, F-SEARCH |
| IDLER | 1 | 0 | 1 | ⑤ | Forward/reverse changeover position | PAUSE |
| REV | 1 | 1 | 0 | ⑥ | From REV direction Normal running mode | R-SEARCH |

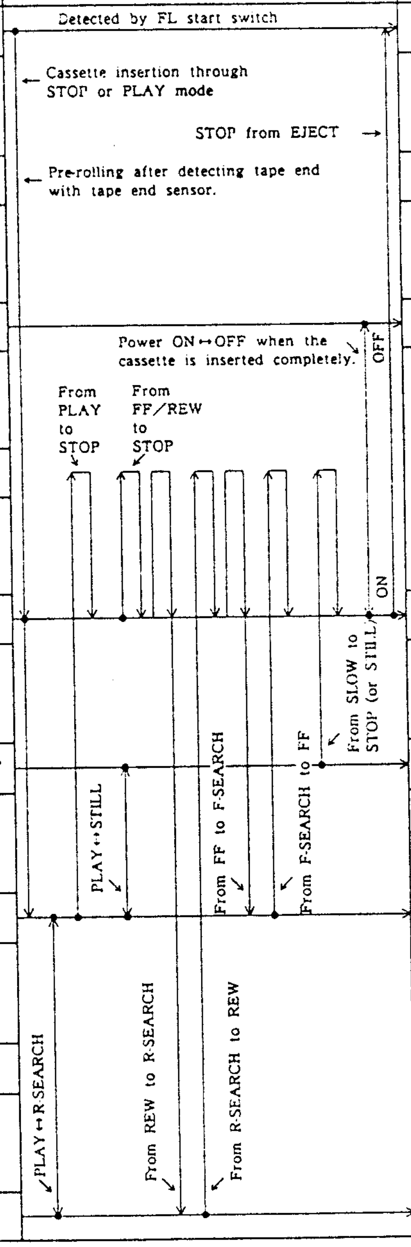

Main Mode Shifting Conditions
Detected by FL start switch
Cassette insertion through STOP or PLAY mode
STOP from EJECT
Pre-rolling after detecting tape end with tape end sensor.
Power ON↔OFF when the cassette is inserted completely.
OFF
ON
From PLAY to STOP
From FF/REW to STOP
From SLOW to STOP (or STILL)
PLAY↔STILL
From FF to F-SEARCH
From F-SEARCH to FF
PLAY↔R-SEARCH
From REW to R-SEARCH
From R-SEARCH to REW

Table 2-1

## 2-2. DESCRIPTION OF MECHANISM DRIVE

To realize the thin type mechanism, a loading motor and two pieces of cam (MAIN CAM GEAR and the MODE CAM GEAR) to be driven by the said motor are mounted on the upper part of the capstan motor, that was a dead space in the conventional mechanisms hitherto available, with a view to optimization of parts mounting layout. (Fig. 2-1 and Fig. 2-2.)

- IMPEDANCE ROLLER and FE HEAD are not used to the exclusive model for playback.
- The shaded sections are different from P90 mechanism.

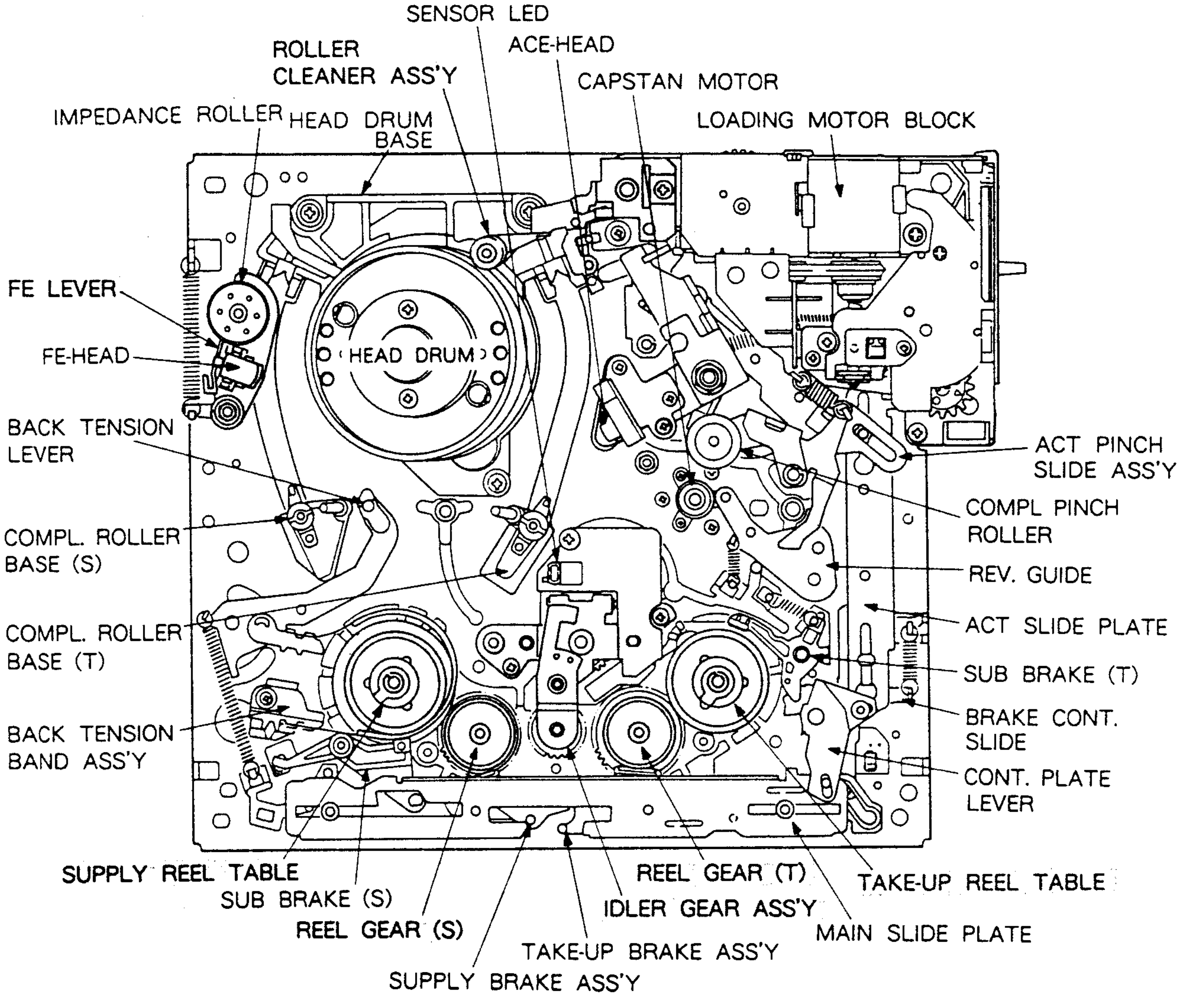

SENSOR LED
ROLLER CLEANER ASS'Y
ACE-HEAD
CAPSTAN MOTOR
IMPEDANCE ROLLER
HEAD DRUM BASE
LOADING MOTOR BLOCK
FE LEVER
FE-HEAD
HEAD DRUM
BACK TENSION LEVER
COMPL. ROLLER BASE (S)
COMPL. ROLLER BASE (T)
BACK TENSION BAND ASS'Y
ACT PINCH SLIDE ASS'Y
COMPL PINCH ROLLER
REV. GUIDE
ACT SLIDE PLATE
SUB BRAKE (T)
BRAKE CONT. SLIDE
CONT. PLATE LEVER
SUPPLY REEL TABLE
SUB BRAKE (S)
REEL GEAR (S)
REEL GEAR (T)
IDLER GEAR ASS'Y
TAKE-UP REEL TABLE
MAIN SLIDE PLATE
TAKE-UP BRAKE ASS'Y
SUPPLY BRAKE ASS'Y
FRONT

Fig. 2-1. Top View of Mechanism (Initial mode)

- Some models have no Capstan Soft Brake.
- SAFTY SWITCH is not used to the exclusive model for playback.
- The shaded sections are different from P90 mechanism.

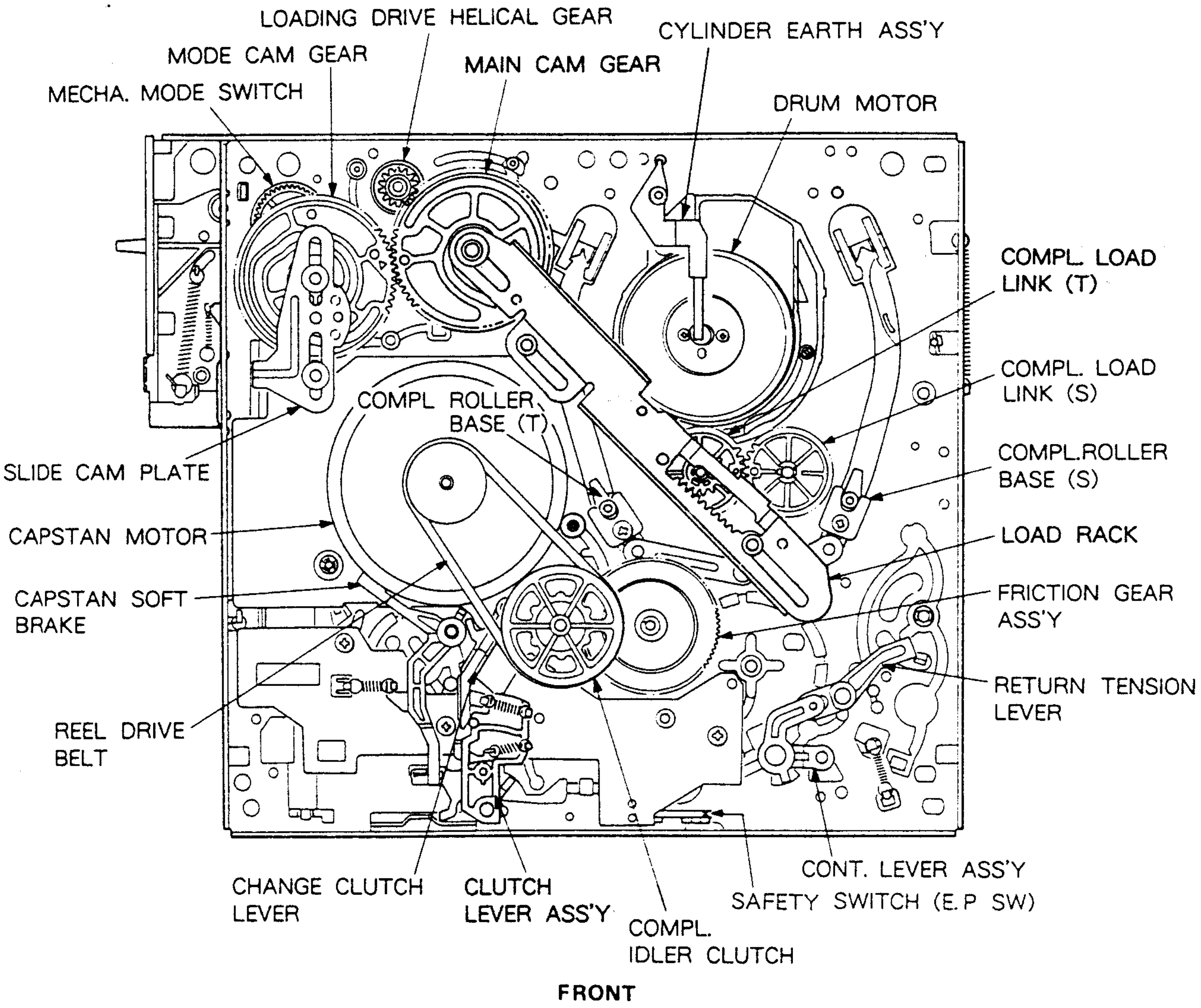

LOADING DRIVE HELICAL GEAR
CYLINDER EARTH ASS'Y
MODE CAM GEAR
MAIN CAM GEAR
MECHA. MODE SWITCH
DRUM MOTOR
COMPL. LOAD LINK (T)
COMPL. LOAD LINK (S)
COMPL ROLLER BASE (T)
COMPL.ROLLER BASE (S)
SLIDE CAM PLATE
CAPSTAN MOTOR
LOAD RACK
CAPSTAN SOFT BRAKE
FRICTION GEAR ASS'Y
RETURN TENSION LEVER
REEL DRIVE BELT
CONT. LEVER ASS'Y
CHANGE CLUTCH LEVER
CLUTCH LEVER ASS'Y
SAFETY SWITCH (E.P SW)
COMPL. IDLER CLUTCH
FRONT

**Fig. 2-2. Bottom View of Mechanism (Initial mode)**

These two cams have one CAM GROOVE on both sides. A total of four CAM GROOVEs performs independent functions to meet the multi-function needs of these days by driving the elements of a wide variety of functions with the motor precisely controlled by a microcomputer.
The two cams are positive motion cams having a groove over 570 degrees. These cams cause the amount of lift to be changed by a mild gradient according to the angle of rotation while synchronizedly being rotated by an outer circumferential gear to alleviate the load exerted on the cams when driving the rod linked with the cams and also to ensure position stability in each mode of operation. The geometry of each cam and that of a metal fitting of the drive section are shown in Fig. 2-3 and Fig. 2-4, respectively. Also, the role of each cam used is described below.
On the GROOVE 3 side of MODE CAM GEAR have a small gear.
This small gear is engaged with the MECHANISM MODE SWITCH as shown in Fig. 2-3., and detect the mechanism operation mode. In this way, the two cams and the MECHANISM MODE SWITCH are rotated synchronously, and the mechanism is fully synchronized and driven for each mode.

MAIN CAM GEAR : CAM GROOVE 1.
Pinch roller pressing operation
CAM GROOVE 2.
Tape loading mechanical drive
MODE CAM GEAR : CAM GROOVE 3.
Brake and clutch selecting operation
CAM GROOVE 4.
Brake control and front unloading control

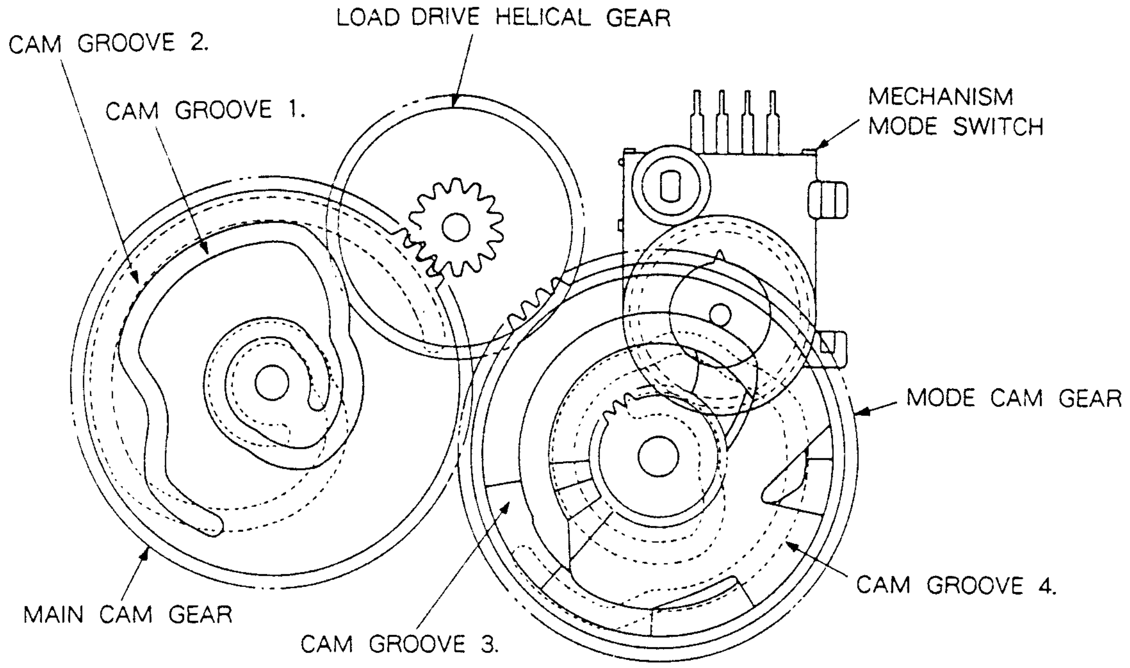


Fig. 2-3 PLAN OF CAMS CONSTRUCTION

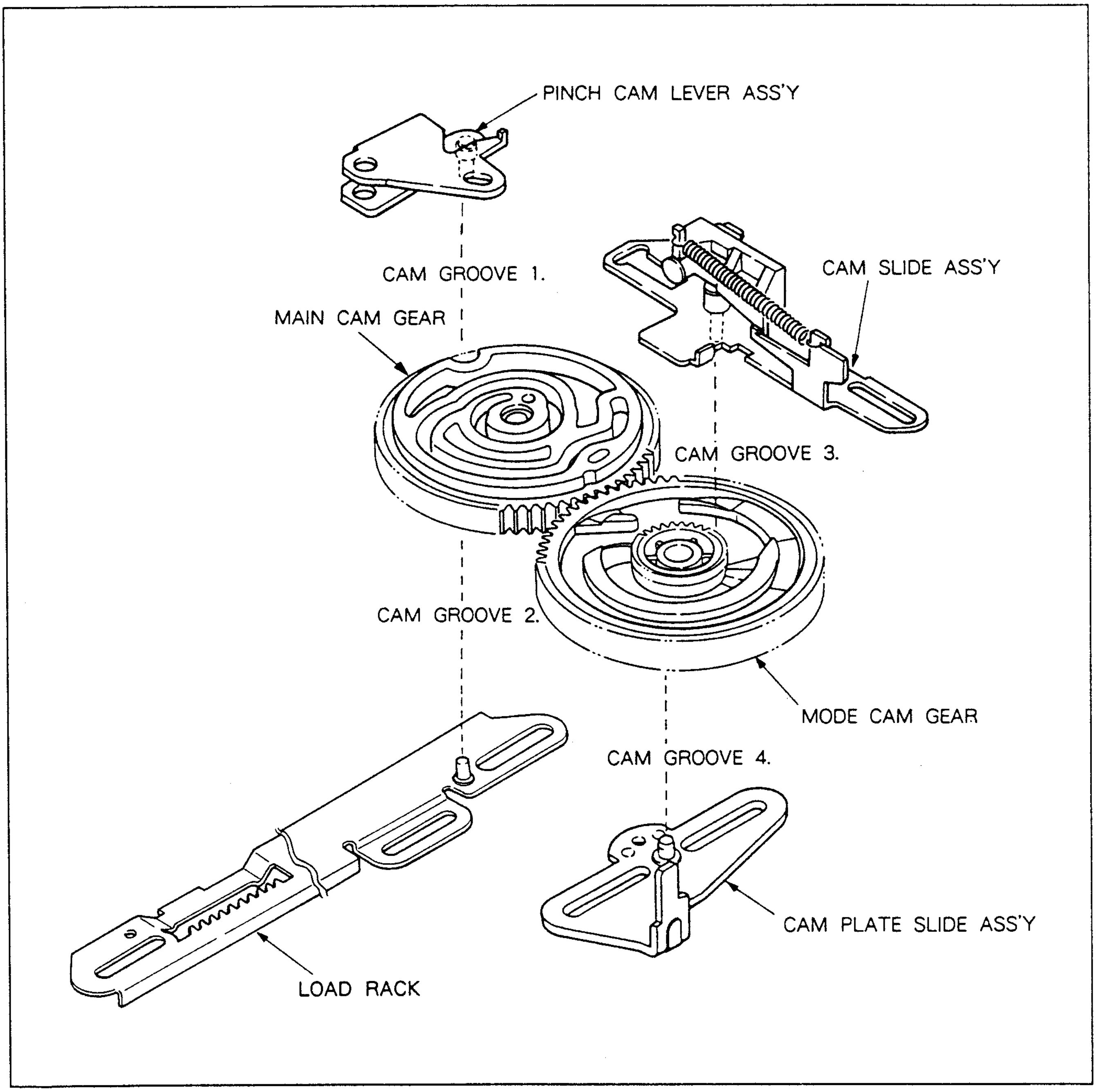

PINCH CAM LEVER ASS'Y
CAM SLIDE ASS'Y
CAM GROOVE 1.
MAIN CAM GEAR
CAM GROOVE 3.
CAM GROOVE 2.
MODE CAM GEAR
CAM GROOVE 4.
CAM PLATE SLIDE ASS'Y
LOAD RACK

**Fig. 2-4. View of Cams Construction**

### 2-2-1. Tape Loading Mechanism

The tape loading mechanism is compactly designed with use of a LOAD RACK for loading by drive from the before-mentioned MAIN CAMs with CAM GROOVE 2. The LOAD RACK is laid on the dead space in between the DD capstan motor and the head motor for effective space utilization. (Fig. 2-5)
The process from tape pull-out upon loading to contact of the leading guide section with the stopper of drum base and press-fitting under tension of spring is guided and driven in such a manner that the rod is drawn inward from the outer circumferential direction of the CAM GROOVE 2, thereby reducing the load torque (PV value) to the CAM GROOVE. And, the load of the loading motor is minimized to enhance reliability.

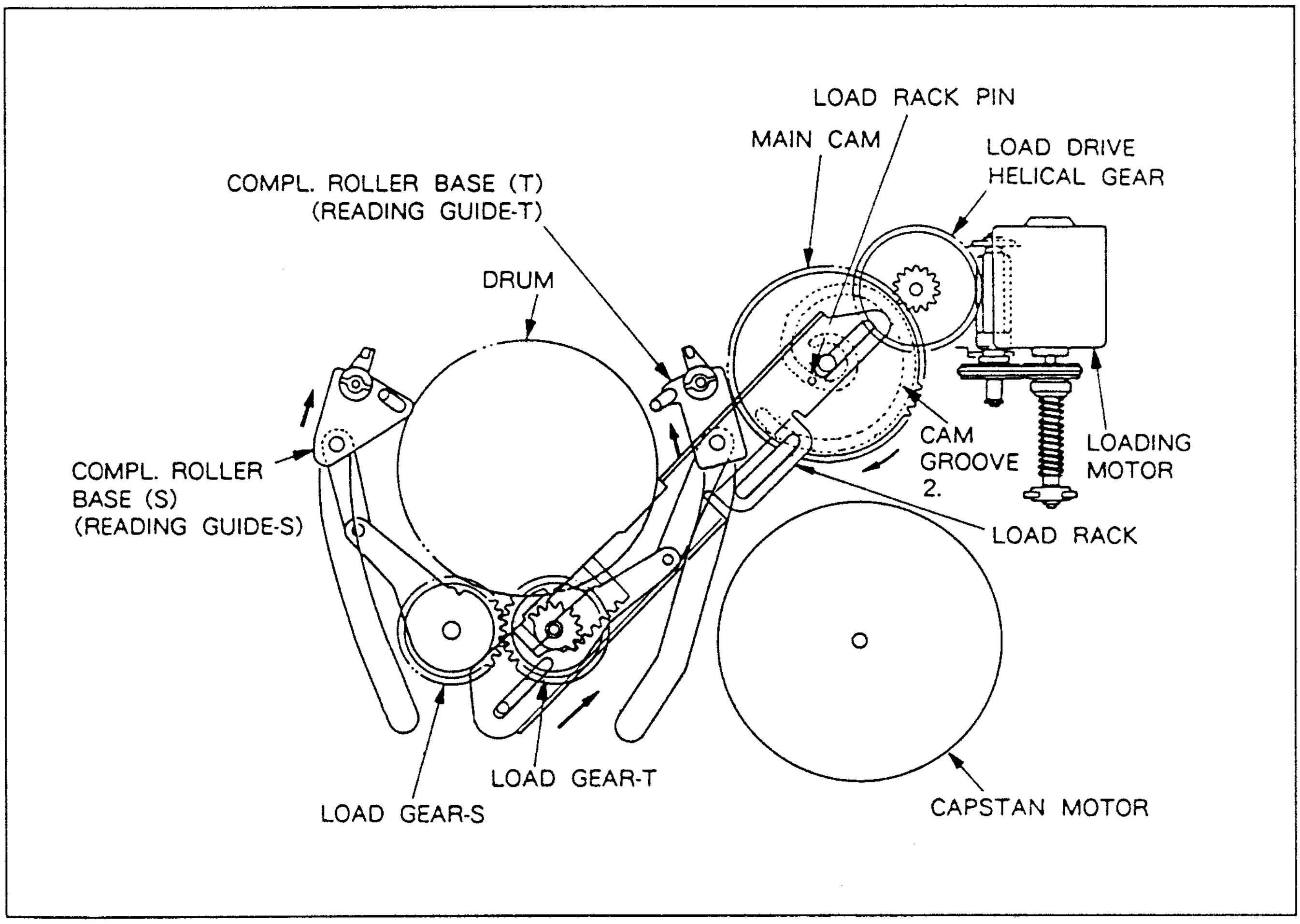

LOAD RACK PIN
MAIN CAM
LOAD DRIVE HELICAL GEAR
COMPL. ROLLER BASE (T) (READING GUIDE-T)
DRUM
COMPL. ROLLER BASE (S) (READING GUIDE-S)
CAM GROOVE 2.
LOADING MOTOR
LOAD RACK
LOAD GEAR-T
LOAD GEAR-S
CAPSTAN MOTOR

Fig. 2-5. Construction of Tape Loading Mechanism

### 2-2-2. Pinch Roller Pressing Mechanism

The PINCH LEVER assembly of the pinch roller is operated by the PINCH CAM LEVER (rod) driven by the CAM GROOVE 1 of the before-mentioned MAIN CAM, and then press-fitted to the capstan. The revolving tape guide (REV.GUIDE) is interlockingly operated with the PINCH LEVER assembly to ensure stable tape running at a fixed speed. (Fig. 2-6)

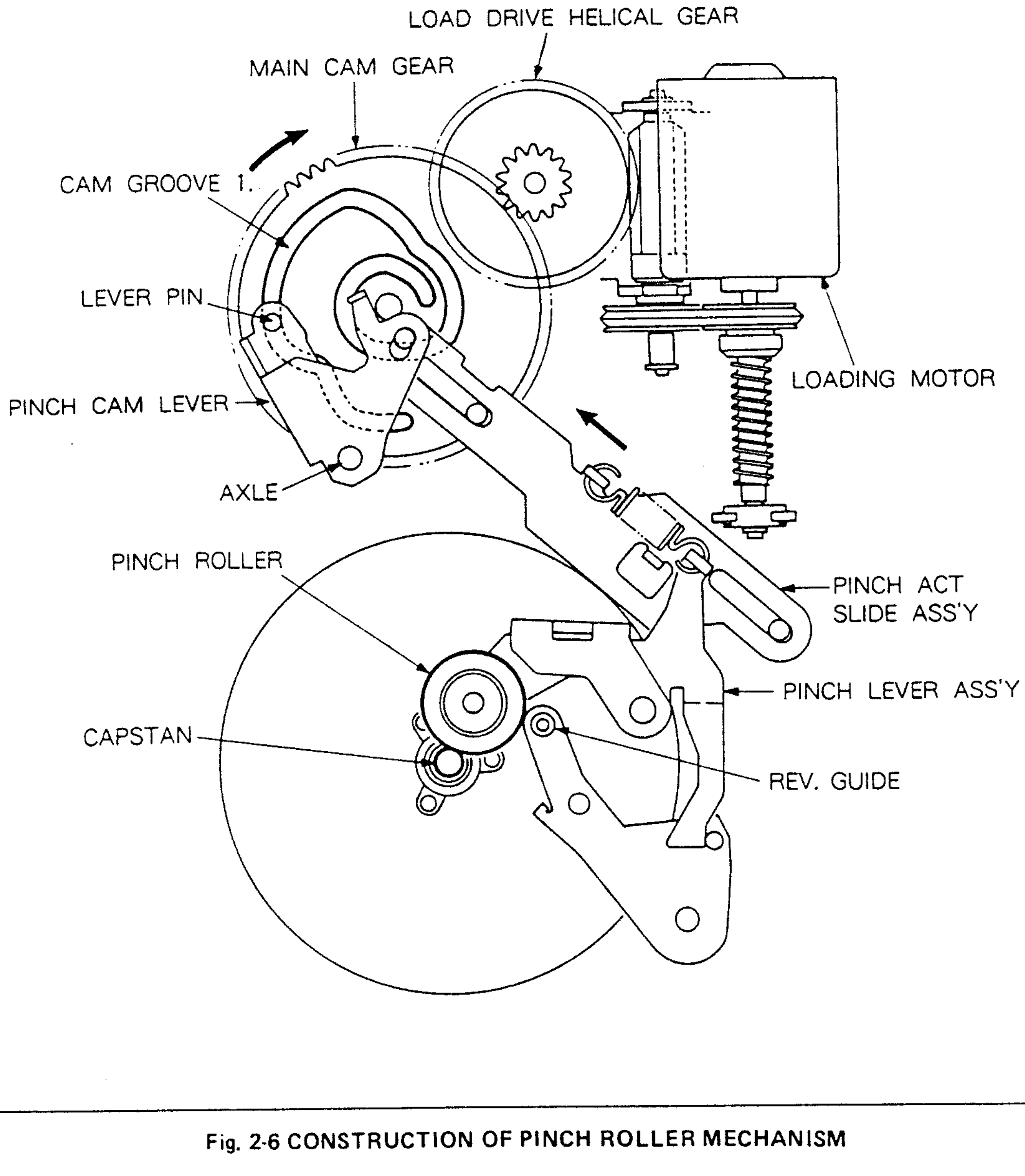

LOAD DRIVE HELICAL GEAR
MAIN CAM GEAR
CAM GROOVE 1.
LEVER PIN
PINCH CAM LEVER
AXLE
LOADING MOTOR
PINCH ROLLER
PINCH ACT SLIDE ASS'Y
PINCH LEVER ASS'Y
CAPSTAN
REV. GUIDE

Fig. 2-6 CONSTRUCTION OF PINCH ROLLER MECHANISM

### 2-2-3. Operation of Brake Control Plate

The ACT SLIDE PLATE and the MAIN SLIDE PLATE shown in Fig. 2-7 is driven by the CAM GROOVE 4 of the MODE CAM GEAR for precise control of operations including the control of back tension lever, auxiliary brake (SUB BRAKE S/T), main brake (SUPPLY BRAKE and TAKE-UP BRAKE), clutch selection, and drive selection of front loading mechanism.

Also, the mechanism mode switch is engaged with the small gear of the MODE CAM GEAR for sync rotation. At the time, the detection position of each mode is set so that it becomes the flat section at the cam curve of the CAM GROOVE 4 of the MODE CAM GEAR. So, even if motor stop time deviation occurs due to the load following the detection of the loading motor stop position, the control plate linked with a stop in the specified position.

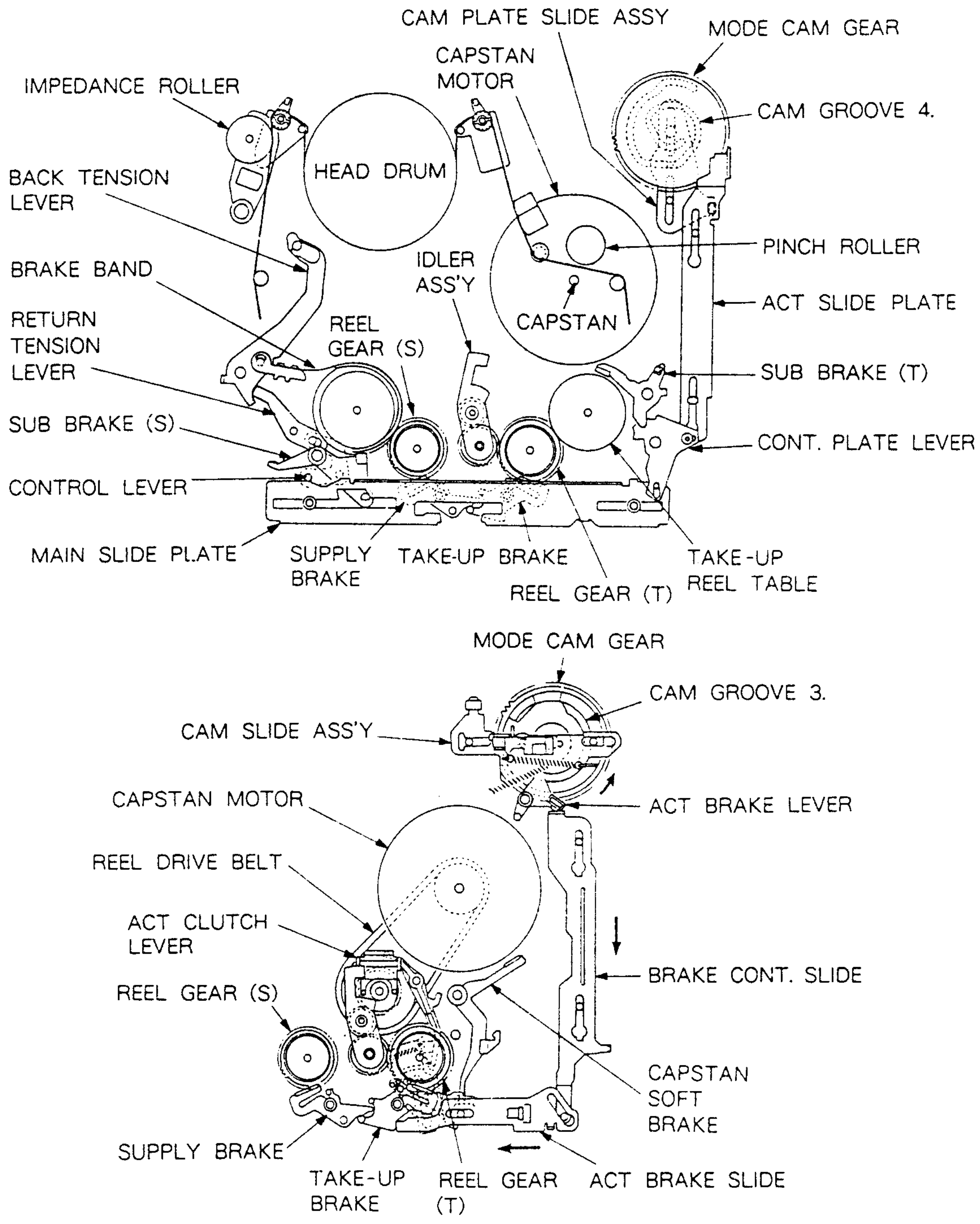

CAM PLATE SLIDE ASSY
MODE CAM GEAR
CAPSTAN MOTOR
IMPEDANCE ROLLER
CAM GROOVE 4.
BACK TENSION LEVER
HEAD DRUM
PINCH ROLLER
BRAKE BAND
IDLER ASS'Y
ACT SLIDE PLATE
RETURN TENSION LEVER
REEL GEAR (S)
CAPSTAN
SUB BRAKE (T)
SUB BRAKE (S)
CONT. PLATE LEVER
CONTROL LEVER
MAIN SLIDE PLATE
SUPPLY BRAKE
TAKE-UP BRAKE
TAKE-UP REEL TABLE
REEL GEAR (T)
MODE CAM GEAR
CAM GROOVE 3.
CAM SLIDE ASS'Y
CAPSTAN MOTOR
ACT BRAKE LEVER
REEL DRIVE BELT
ACT CLUTCH LEVER
BRAKE CONT. SLIDE
REEL GEAR (S)
CAPSTAN SOFT BRAKE
SUPPLY BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
ACT BRAKE SLIDE

Fig. 2-7 CONSTRUCTION OF BRAKE CONTROL PLATE (AT REW/FF, STOP MODE)

### 2-2-4. Brake Control Mechanism

The mechanical logic of the brake state is shown in Fig. 2-8. The brake which damps the reel rotation is operated by the BRAKE CONTROL SLIDE driven from the CAM GROOVE 3 of the MODE CAM GEAR.

Also, to alleviate damage to the tape caused by high tension of the brake in operation, the tape is stopped after brake operation and the shape is thoughtfully designed for proper biting-in ratio of the left and the right brakes after-mentioned to each other.

This enables the supply brake to be released by the operation of the above-mentioned MAIN SLIDE PLATE after an elapse of prefixed slight time to reduce the tape tension to zero, and to provide the tape with a proper degree of looseness. As a result, a slight gap is created in the tape from the HEAD DRUM.

Further, a momentary still mechanism which dispenses with use of a plunger solenoid is not provided as one of design features of the P-90 mechanism.

To stabilize the image in an extremely short period of time during a shift to the STILL mode from the PLAY mode, the auxiliary brake (CAPSTAN SOFT BRAKE) is press-fit to the outer circumference of the capstan motor by the before-mentioned CAM GROOVE 3 of the MODE CAM GEAR.

These operations is interlocked with the operation of the before-mentioned ACT SLIDE PLATE and the MAIN SLIDE PLATE. It consists of one MODE CAM for offsetting the operating position.

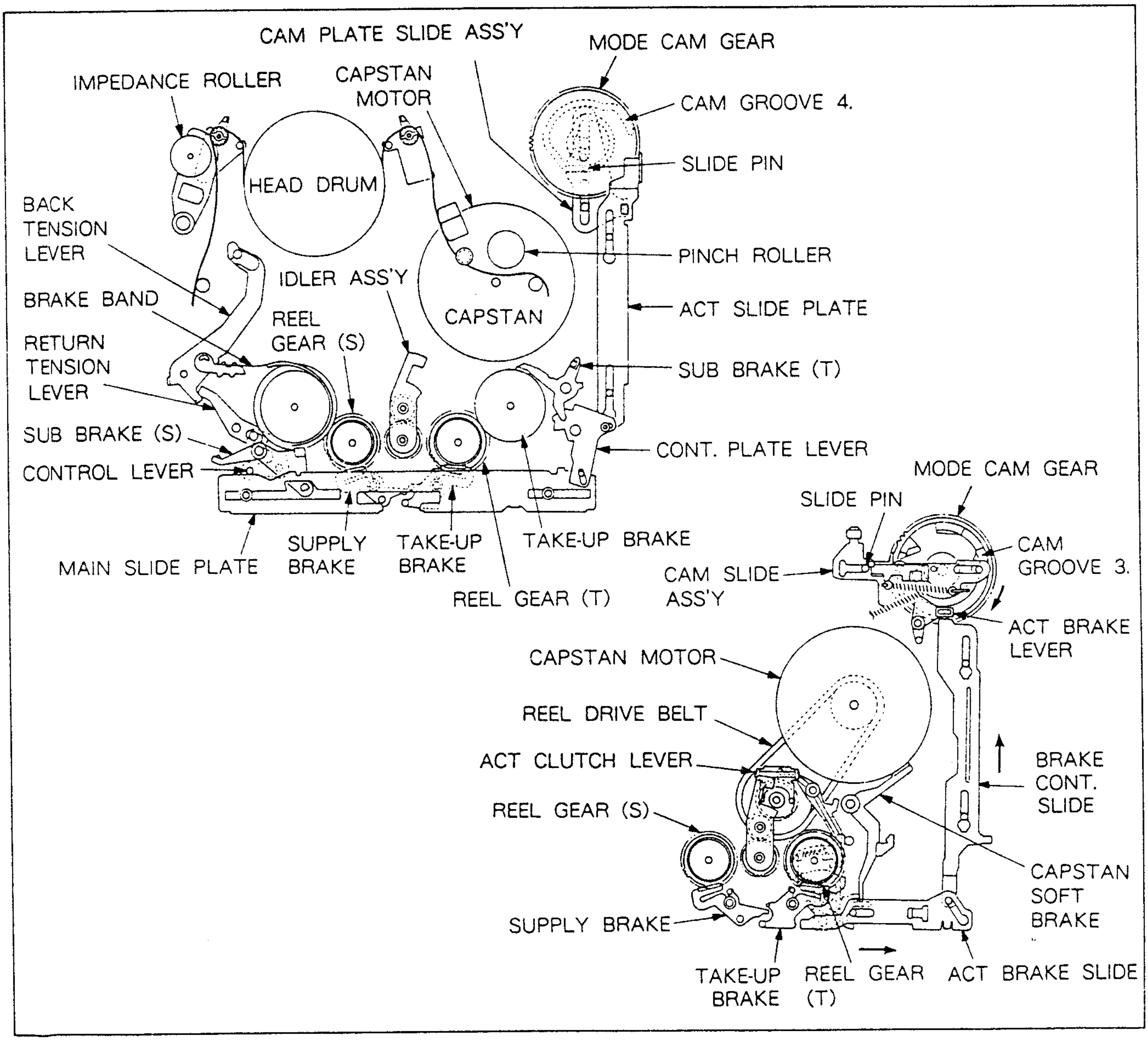

CAM PLATE SLIDE ASS'Y
MODE CAM GEAR
IMPEDANCE ROLLER
CAPSTAN MOTOR
CAM GROOVE 4.
SLIDE PIN
HEAD DRUM
BACK TENSION LEVER
PINCH ROLLER
IDLER ASS'Y
BRAKE BAND
ACT SLIDE PLATE
REEL GEAR (S)
CAPSTAN
RETURN TENSION LEVER
SUB BRAKE (T)
SUB BRAKE (S)
CONT. PLATE LEVER
CONTROL LEVER
MODE CAM GEAR
SLIDE PIN
MAIN SLIDE PLATE
SUPPLY BRAKE
TAKE-UP BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
CAM SLIDE ASS'Y
CAM GROOVE 3.
ACT BRAKE LEVER
CAPSTAN MOTOR
REEL DRIVE BELT
ACT CLUTCH LEVER
BRAKE CONT. SLIDE
REEL GEAR (S)
CAPSTAN SOFT BRAKE
SUPPLY BRAKE
TAKE-UP BRAKE
REEL GEAR (T)
ACT BRAKE SLIDE

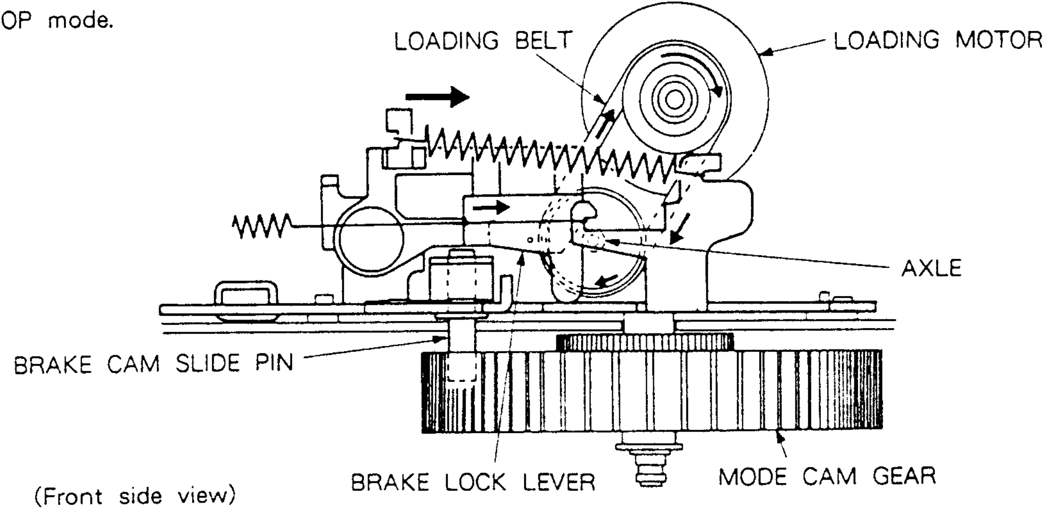
**Fig. 2-8 CONSTRUCTION OF BRAKE CONTROL PLATE (AT BRAKE MODE)**

### 2-2-5. Brake Lock Release Mechanism (FF/REW→STOP Mode)

The brake lock momentary release mechanism is shown in Fig. 2-9 ⓐ, ⓑ and Fig. 2-10.

In the FF/REW mode (Fig. 2-9 ⓐ) mechanical elastic load is given to the BRAKE LOCK LEVER mounted on the BRAKE CAM SLIDE which causes the brake to operate, and it is locked to the high-speed rotary axle of the 1st reducing section of the loading motor.

ⓐ changes from brake mode or lock released state to FF/REW, STOP mode.

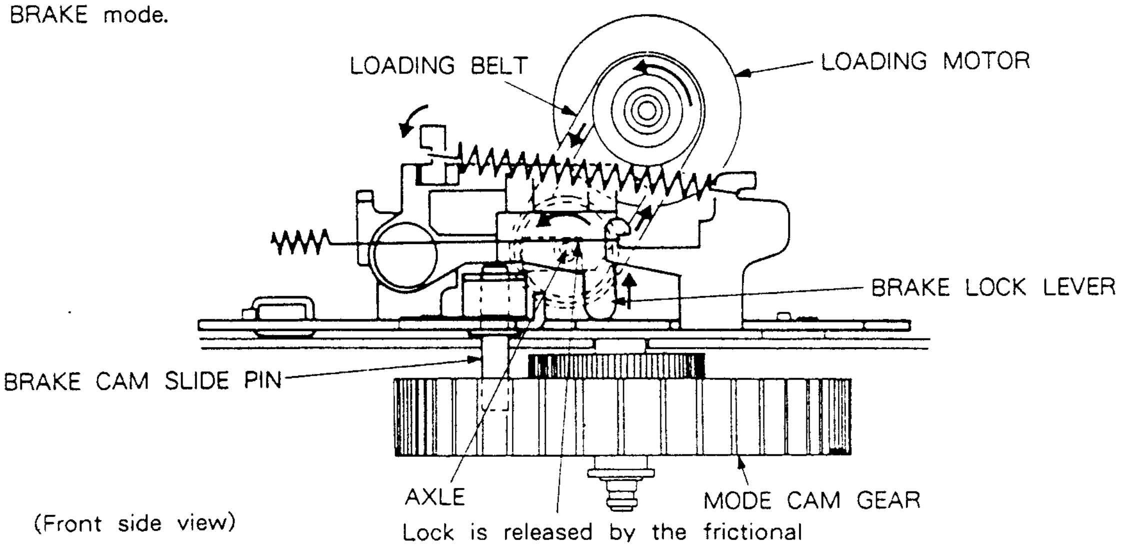

LOADING BELT
LOADING MOTOR
AXLE
BRAKE CAM SLIDE PIN
BRAKE LOCK LEVER
MODE CAM GEAR

(Front side view)

Fig. 2-9 ⓐ BRAKE LOCK & RELEASE MECHANISM

At the time of a shift to the STOP mode from the FF/REW (Fig. 2-9 ⓑ), the BRAKE LOCK LEVER releases the lock on slight rotation of the axle by contact between the rotary shaft and the friction resistance so that the brake can be instantaneously applied to the reel. The lock release speed is almost the same as the start-up of the loading motor. So, the its response to the brake is very quick, and construction is simplified also.

ⓑ Changes from FF/REW, STOP mode to BRAKE mode.


LOADING BELT
LOADING MOTOR
BRAKE LOCK LEVER
BRAKE CAM SLIDE PIN
AXLE
MODE CAM GEAR

(Front side view)

Lock is released by the frictional resistance of an elastic load.

Fig. 2-9 ⓑ BRAKE LOCK & RELEASE MECHANISM

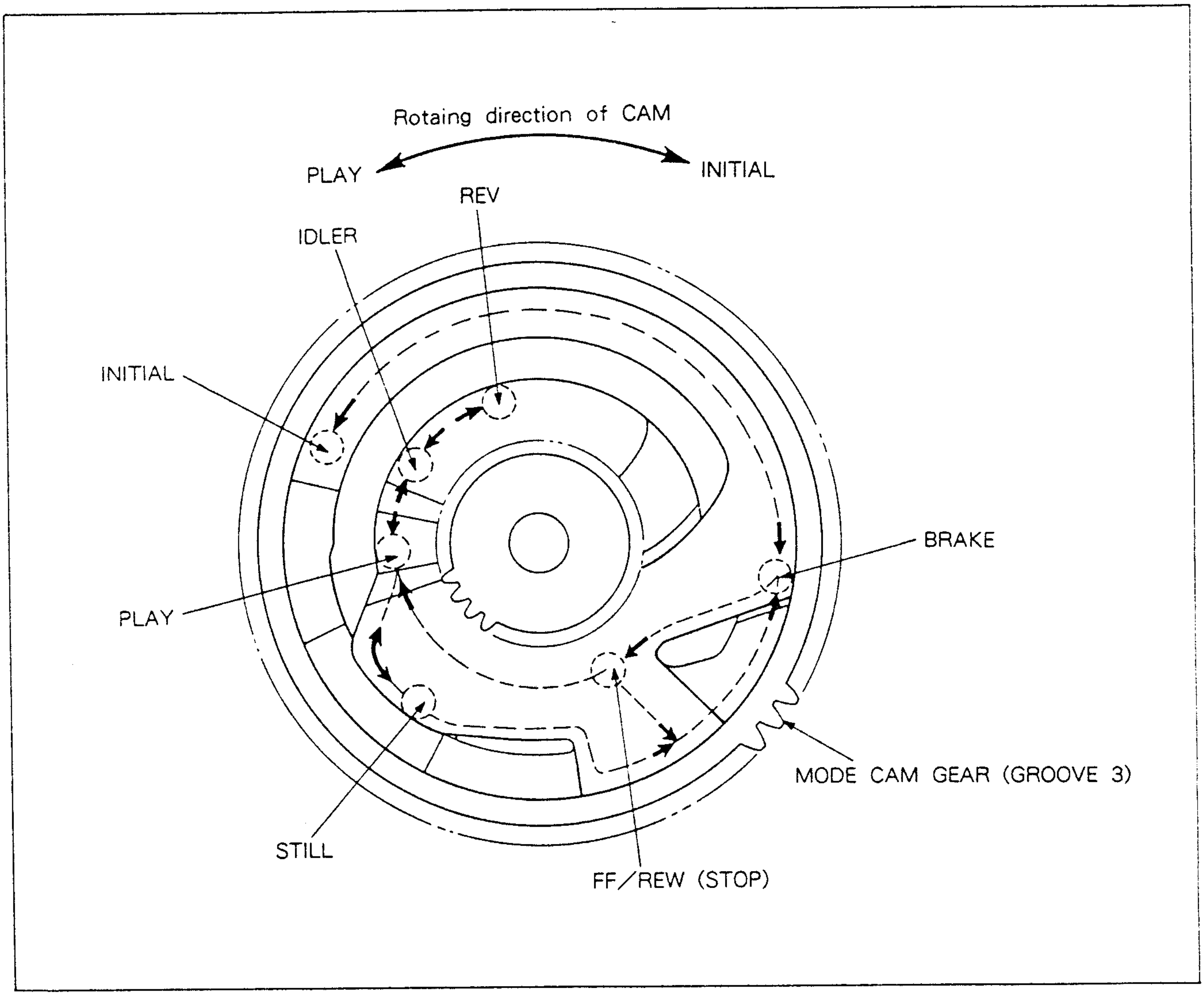
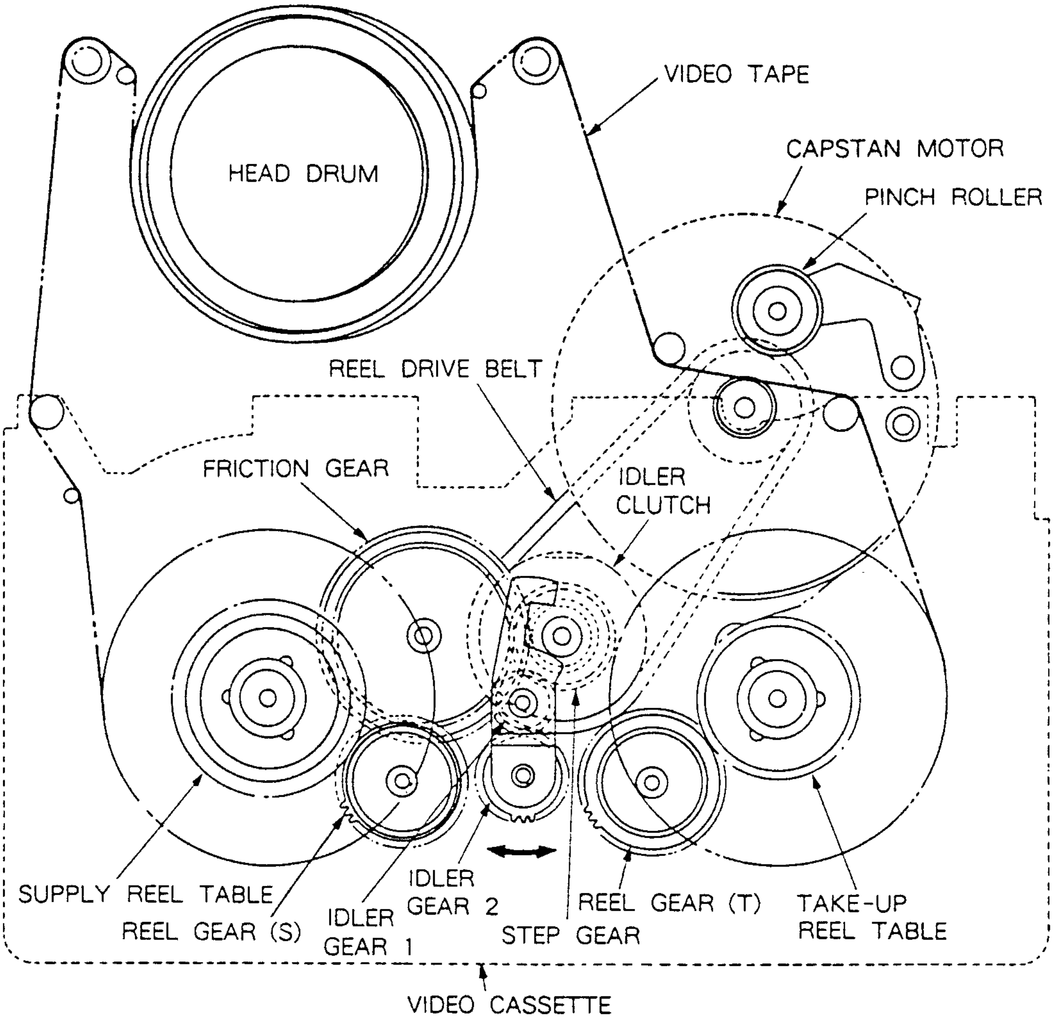

Rotaing direction of CAM
PLAY
INITIAL
REV
IDLER
INITIAL
BRAKE
PLAY
MODE CAM GEAR (GROOVE 3)
STILL
FF／REW (STOP)

Fig. 2-10 POSITIONING OF BRAKE CAM SLIDE-PIN ON THE GROOVE 3 OF MODE CAM GEAR

## 2-3. REEL TABLE DRIVE

### 2-3-1. Reel Table Drive Mechanism

This mechanism employs the system of driving the tape from the DD capstan motor via rubber belt. In the tape constant speed running mode for PLAY, F-SEARCH, and R-SEARCH, the capstan and the pinch roller are press-fitted to allow the tape to run at a constant speed. By providing a FRICTION MECHANISM in between the capstan motor and the reel table, the tape is taken up. In the FF/REW tape high-speed take-up mode, the capstan and the pinch roller are separated from each other, and the capstan motor and the reel table are linked direct by the clutch mechanism to carry out tape take-up. Also, to realize a thin type reel table drive section, the mechanism is simplified and the rotary parts are thinned for realization of physically compact design, and a step is provided on the reel table mounting section of the chassis by high-precision drawing process. A simplified figure of the drive mechanism is shown in Fig. 2-11 and Fig. 2-12. Power transmission to the pulley of the clutch mechanism section is done from the DD capstan motor via rubber belt.

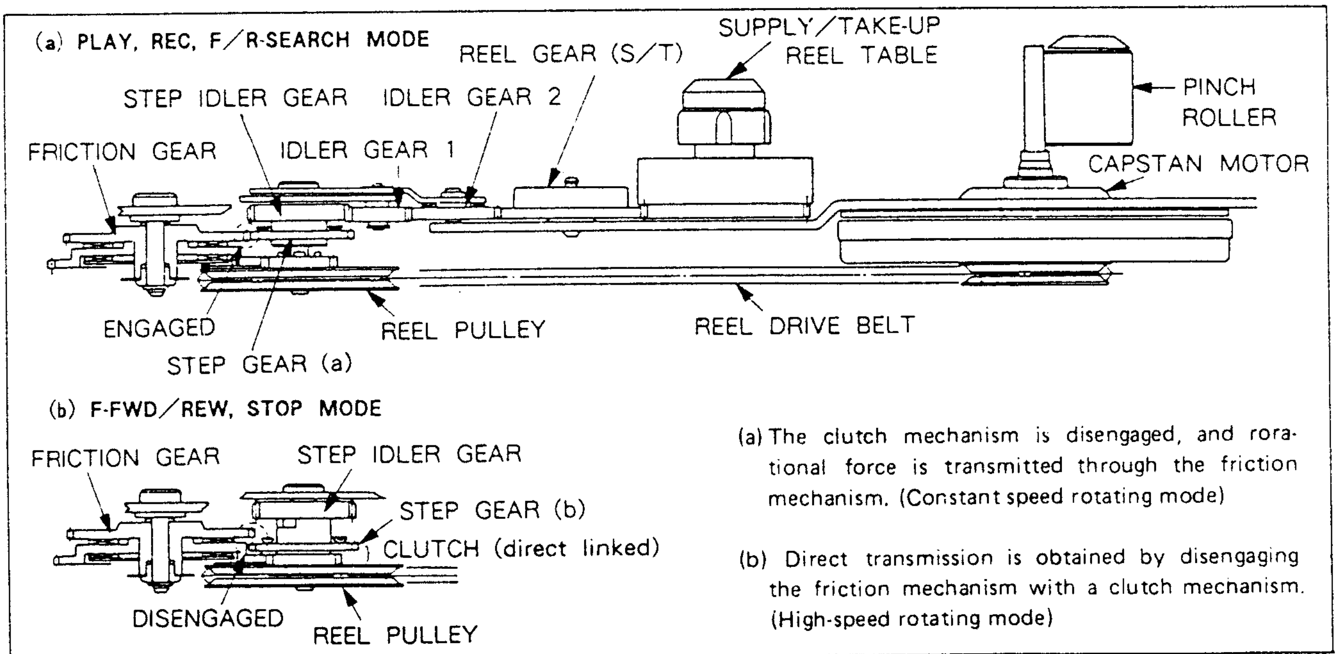


VIDEO TAPE
CAPSTAN MOTOR
PINCH ROLLER
HEAD DRUM
REEL DRIVE BELT
FRICTION GEAR
IDLER CLUTCH
SUPPLY REEL TABLE
REEL GEAR (S)
IDLER GEAR 1
IDLER GEAR 2
STEP GEAR
REEL GEAR (T)
TAKE-UP REEL TABLE
VIDEO CASSETTE

Fig. 2-11 REEL TABLE DRIVE

At that time, the reel table winding speed and the torque needed in a wide variety of modes are obtained by shifting the up and down STEP GEAR positioned at the upper section of pulley. The selection of the STEP GEAR is precision controlled by the MODE CAM GEAR via the BRAKE CONTROL SLIDE. With the up and down STEP GEAR down, the clutch mechanism is direct linked, and the transmission power from the capstan motor is sent to the reel table via IDLER GEAR assembly and REEL GEAR (S/T). On the other hand, FRICTION MECHANISM acts between the pulley and the STEP GEAR when the up and down STEP GEAR are in the elevated state, thereby controlling the transmission torque for generation of the take-up slip. Normally, it is desirable that the take-up torque of the reel table is higher in the R-SEARCH mode than that in the PLAY mode. This is because in the forward tape running the tape winding load to the HEAD DRUM has to be taken care of the capstan and the pinch roller.
While, in the reverse tape running mode the winding load has to be taken on the take-up reel table. In the special playback operation, a mechanism for varying the take-up torque of the reel table is required to be changed depending upon the running direction of the tape. But in this mechanism, the torque selection is made by varying the reduction speed ratio up to the reel table from the capstan motor on both the forward side and the reverse side of the tape. Also, design simplification of the selection mechanism is realized by using a single friction mechanism. In other words, the take-up torque necessary for forward/reverse rotation is obtained by controlling the capstan motor speed. Rotation speed and torque needed for each mode of operation are converted by clutch mechanism for transmission of the drive power to the idler mechanism. The left and right moving IDLER GEAR assembly is automatically rotated to the left and the right according to the direction of capstan motor rotation by using the friction force. Because the mechanism is so designed as to drive the reel table of the side on which the tape is transported by the capstan and pinch roller, the forward and reverse constant speed drive (the PLAY, REC, F/R SEARCH modes) is carried out in the state in which the FRICTION MECHANISM is being operated (Fig. 2-12 ⓐ) On the other hand, in the condition in which the friction mechanism is not in operation, the forward/reverse high speed drive (FF/REW mode) is made possible (Fig. 2-12 ⓑ). Also, the reel drive in all modes is taken care of by the single left and right moving idler for design simplification.

The idler body employs gear drive to improve reliability with a view to realizing parts thinning while securing the transmission reliability. Using a resin molded gear as material of an idler, the efficiency of the entire reel drive system has been improved because there are no deformation and loss, and minimized rotation moving torque necessary for biting-in as in the case of a material such as rubber which shows considerable elastic deformation, etc. Further in this mechanism, an intermediate gear is provided in between the reel side and the idler to minimize the rotating and moving angle of the left and right moving idlers, thereby holding the reversing time to a minimum when shifting to the tape running direction change mode. This results in significantly reduced possibility of tape looseness.


(a) PLAY, REC, F/R-SEARCH MODE

(b) F-FWD/REW, STOP MODE

(a) The clutch mechanism is disengaged, and rorational force is transmitted through the friction mechanism. (Constant speed rotating mode)

(b) Direct transmission is obtained by disengaging the friction mechanism with a clutch mechanism. (High-speed rotating mode)

Fig. 2-12 REEL TABLE DRIVE (SIDE VIEW)

### 2-3-2. Reel Table Drive Clutch Lock and Release Mechanism

As described in the preceding section, using the selection of the step gear (CLUTCH MECHANISM), two mechanisms which are driven by being selected via direct drive or via FRICTION MECHANISM from the capstan motor, to execute the reel table drive. The operating status of the clutch lock and the releasing mechanism is shown in Fig. 2-13.

Fig. 2-13 ① shows the tape unloading position (INITIAL position) when the power for the mechanism operating mode is switched off.

At that times all the levers are in the initial positions, and the clutch is released also so that a route for reel table drive is created via a friction mechanism.

Fig. 2-13 ② shows that the mechanism operation mode has executed the tape loading and that it has completed its movement to the STOP (stand-by), FF/REW position.

At this time, the CLUTCH ACT LEVER is operated by the hook of the ACT BRAKE SLIDE to move the ACT CLUTCH LEVER in the direction of arrow via the CLUTCH LEVER and the CLUTCH CHANGE LEVER. Now, the up and down STEP GEAR is placed into the direct coupled state. In the FF/REW mode, the reel table is directly driven so that the rotation of the capstan motor is directly transmitted to make high-speed rotation drive possible. When shifting the mode to the STOP from the FF/REW in this condition, the mechanism mode position is once moved back to the brake position, and when the reel table brake is instantaneously applied, the clutch is released once at the same time, after which it returns to the same mechanism mode as the FF/REW mode once again. Now, it is placed in a waiting state in the same condition of the STOP mode as shown in Fig. 2-13 ②.

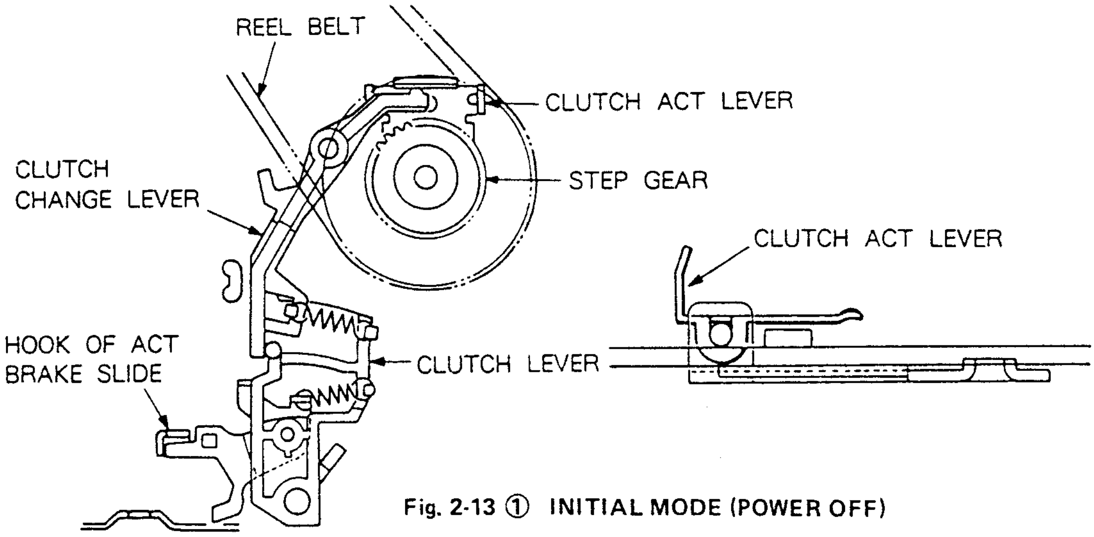

REEL BELT
CLUTCH ACT LEVER
CLUTCH CHANGE LEVER
STEP GEAR
CLUTCH ACT LEVER
HOOK OF ACT BRAKE SLIDE
CLUTCH LEVER

Fig. 2-13 ① INITIAL MODE (POWER OFF)

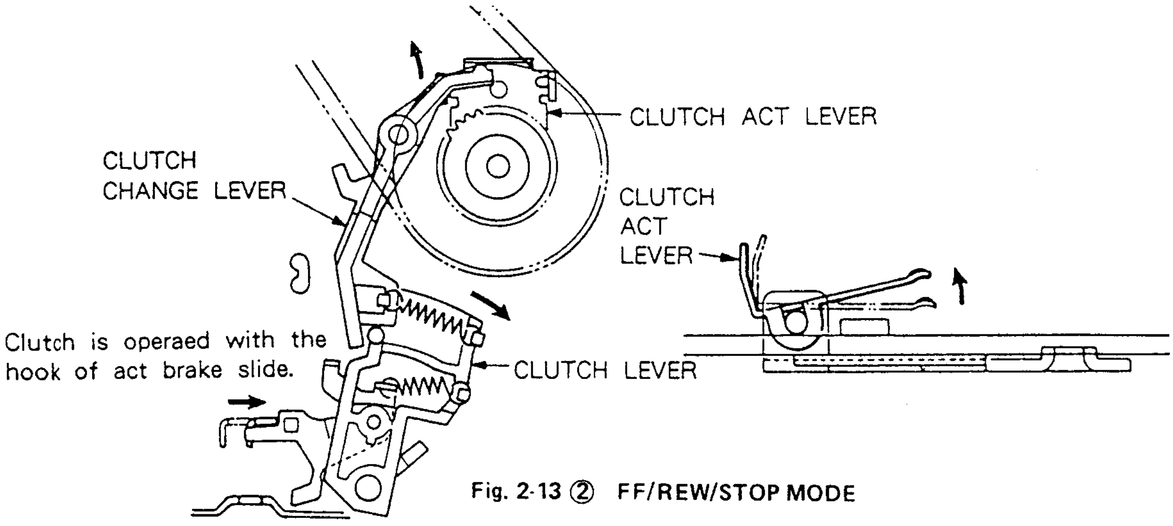

CLUTCH ACT LEVER
CLUTCH CHANGE LEVER
CLUTCH ACT LEVER
Clutch is operaed with the hook of act brake slide.
CLUTCH LEVER

Fig. 2-13 ② FF/REW/STOP MODE

Fig. 2-13 ① – ③ REEL TABLE DRIVE CLUTCH LOCK AND RELEASE MECHANISM

Fig. 2-13 ③ shows the completion state of a shift to the PLAY mode via the STILL mode from the STOP (FF/REW) mode for the mechanism mode position.
In the case of this mode shifting, the movement of the BRAKE ACT SLIDE remains fixed. So, the CLUTCH ACT LEVER should be unlocked by the movement of the hook of the MAIN SLIDE PLATE to cause the clutch to be released. This movement in turn causes the capstan motor rotation to be transmitted via the friction mechanism. So, the constant speed rotation drive necessary for the PLAY (REC) mode and SEARCH mode is made possible.

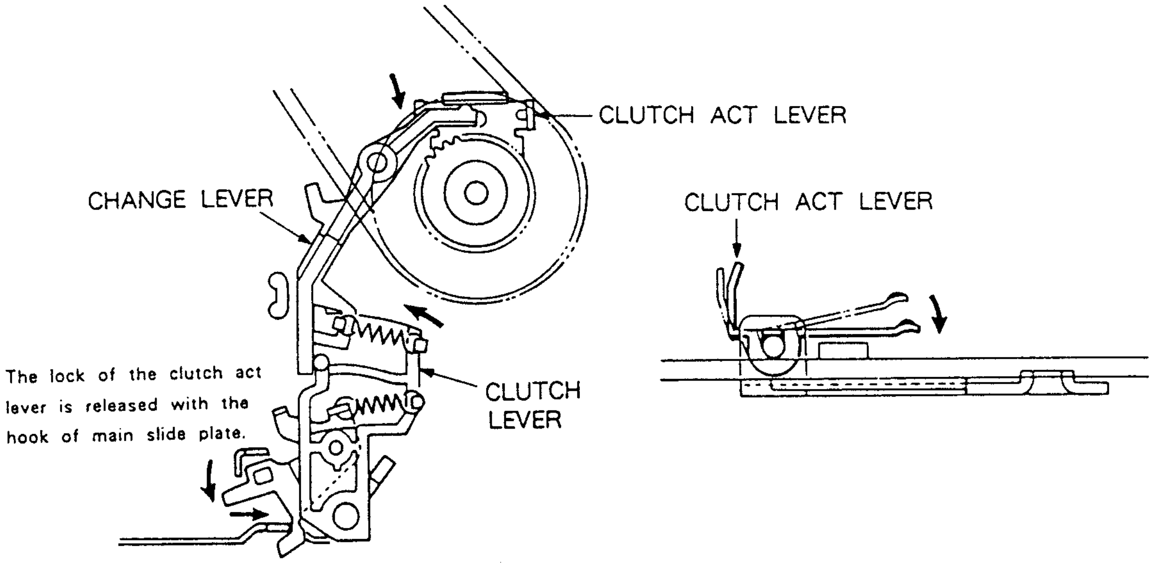

CLUTCH ACT LEVER
CHANGE LEVER
CLUTCH ACT LEVER
The lock of the clutch act lever is released with the hook of main slide plate.
CLUTCH LEVER

**Fig. 2-13 ③ FF/REW/STOP MODE → STILL MODE → PLAY MODE**

## 2-4. FRONT LOADING DRIVE SELECTION MECHANISM

In the P-90 mechanism, the motor dedicated to the use of front loading is not employed. The drive source is utilized instead of the tape loading motor. As shown in Fig. 2-14 ⓐ/ⓑ, during the front loading the FRONT LOAD WORM GEAR directly coupled to the tape loading motor axle and the FRONT HELICAL GEAR with several teeth missing are engaged with each other and rotated for transmission of the drive force to the front loading mechanism. When the cassette tape is inserted completely in the mechanism, the FRONT HELICAL GEAR is automatically disengaged from the FRONT LOAD WORM GEAR. After that, the tape loading operation is performed without the tape loading motor drive force being transmitted to the front loading mechanism.

While the drive force is being transmitted to the front loading mechanism, the CAM GROOVEs of the before-mentioned MAIN CAM GEAR and the MODE CAM GEAR are flat in cam line pattern. These are therefore held without changing the mode state of the mechanism in any way.

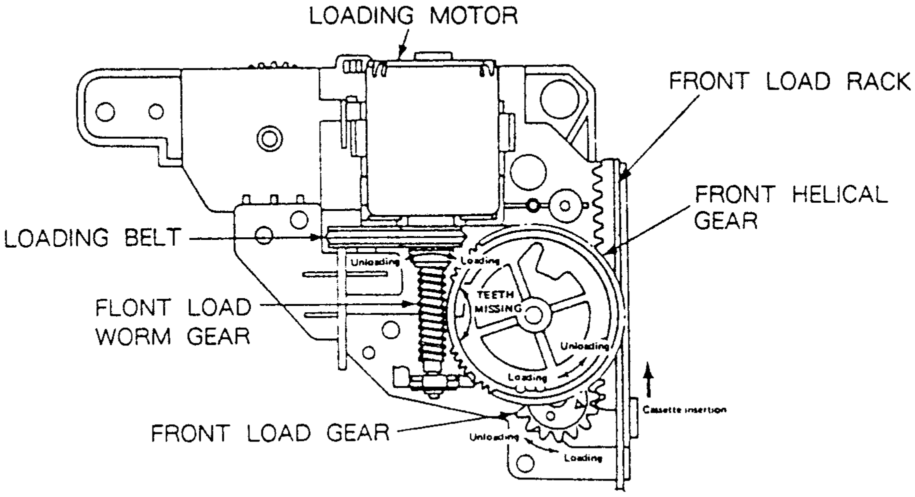

LOADING MOTOR
FRONT LOAD RACK
FRONT HELICAL GEAR
LOADING BELT
FLONT LOAD WORM GEAR
FRONT LOAD GEAR
Unloading
Loading
TEETH MISSING
Unloading
Loading
Cassette insertion
Unloading
Loading

Fig. 2-14 ⓐ FRONT LOADING DRIVE SELECTION MECHANISM (CASSETTE INSERTED POSITION)

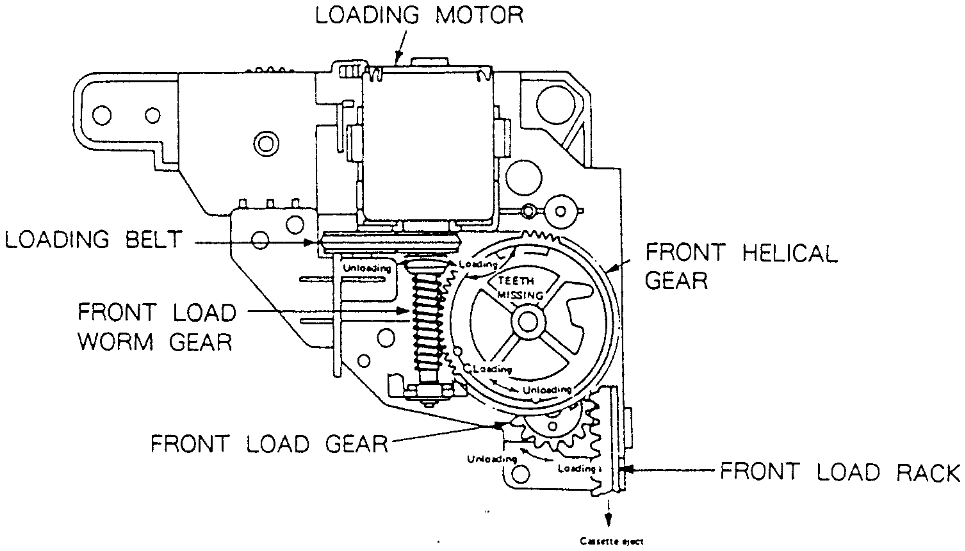

LOADING MOTOR
LOADING BELT
FRONT HELICAL GEAR
FRONT LOAD WORM GEAR
Unloading
Loading
TEETH MISSING
Loading
Unloading
FRONT LOAD GEAR
Unloading
Loading
FRONT LOAD RACK
Cassette eject

Fig. 2-14 ⓑ FRONT LOADING DRIVE SELECTION MECHANISM (CASSETTE EJECTED POSITION)

**(A) Cassette inserting operation**

When inserting a cassette from the cassette ejected state of Fig. 2-14 ⓑ, the FL START SWITCH shown in Fig. 2-15 is turned OFF, to cause the loading motor to be rotated in the direction of insetting. As a result, the FRONT LOAD RACK is drawn in, and the front loading is made up to the cassette tape completion point. So, it is locked in the grooves shown in Fig. 2-15 to complete cassette inserting. At that time, the FRONT HELICAL GEAR is positioned at ⓐ of Fig. 2-14, and is released from the front loading mechanism, therefore, the tape loading operation is continuously performed.

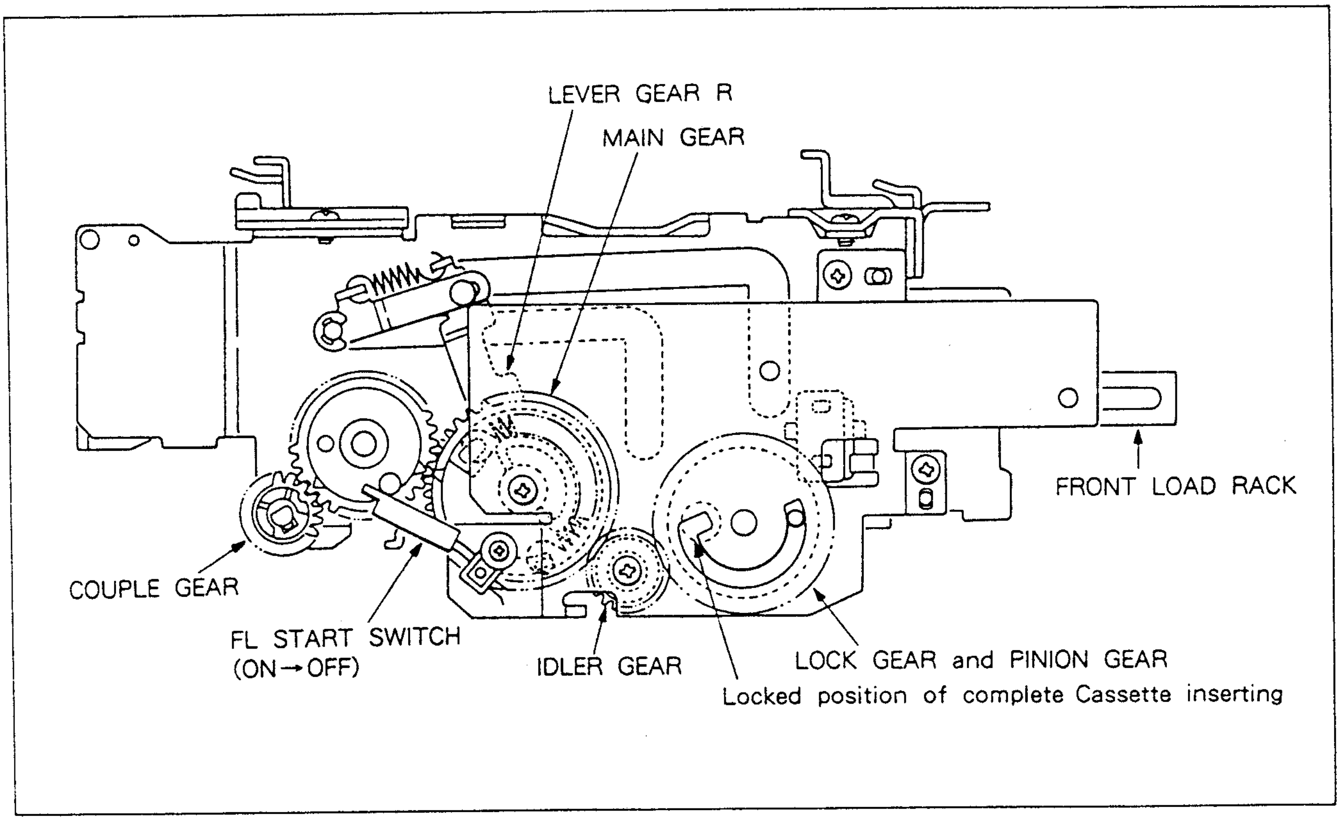

LEVER GEAR R
MAIN GEAR
FRONT LOAD RACK
COUPLE GEAR
FL START SWITCH
(ON→OFF)
IDLER GEAR
LOCK GEAR and PINION GEAR
Locked position of complete Cassette inserting

Fig. 2-15 CASSETTE HOLDER MECHANISM (CASSETTE INSERTING OPERATION)

**(B) Cassette ejection operation**

The components of the front loading mechanism is shown in Fig. 2-16.

When ejecting the cassette from the inserted state shown in Fig. 2-14 ⓐ, the FRONT ACT LEVER is pushed in the direction of arrow due to the ACT SLIDE PLATE moves in the direction of arrow shown in Fig. 2-17. As a result, the FRONT LEVER assembly is turned counterclockwise via the FRONT LOAD SLIDE to cause the FRONT HELICAL GEAR to be engaged with the FRONT LOAD WORM GEAR of the loading motor. At that time, the loading motor is being rotated counterclockwise, so that the FRONT HELICAL GEAR is caused to be rotated counterclockwise also to carry out the front unloading via the FRONT LOAD GEAR and the FRONT LOAD RACK. At the same time, the FRONT ACT LEVER is operated counterclockwise by the hook of the FRONT HELICAL GEAR. This releases the lock being pushed in the direction of arrow indicated by the ACT SLIDE PLATE. So, the FRONT LOAD SLIDE assembly now moves to the initial position to prepare for the next ejection operation. Incidentally, the movement of the FRONT LEVER assembly performs an important function of positioning the FRONT HELICAL GEAR (Fig. 2-14 ⓐ) upon completion of cassette mounting, in addition to the cassette eject start-up operation.

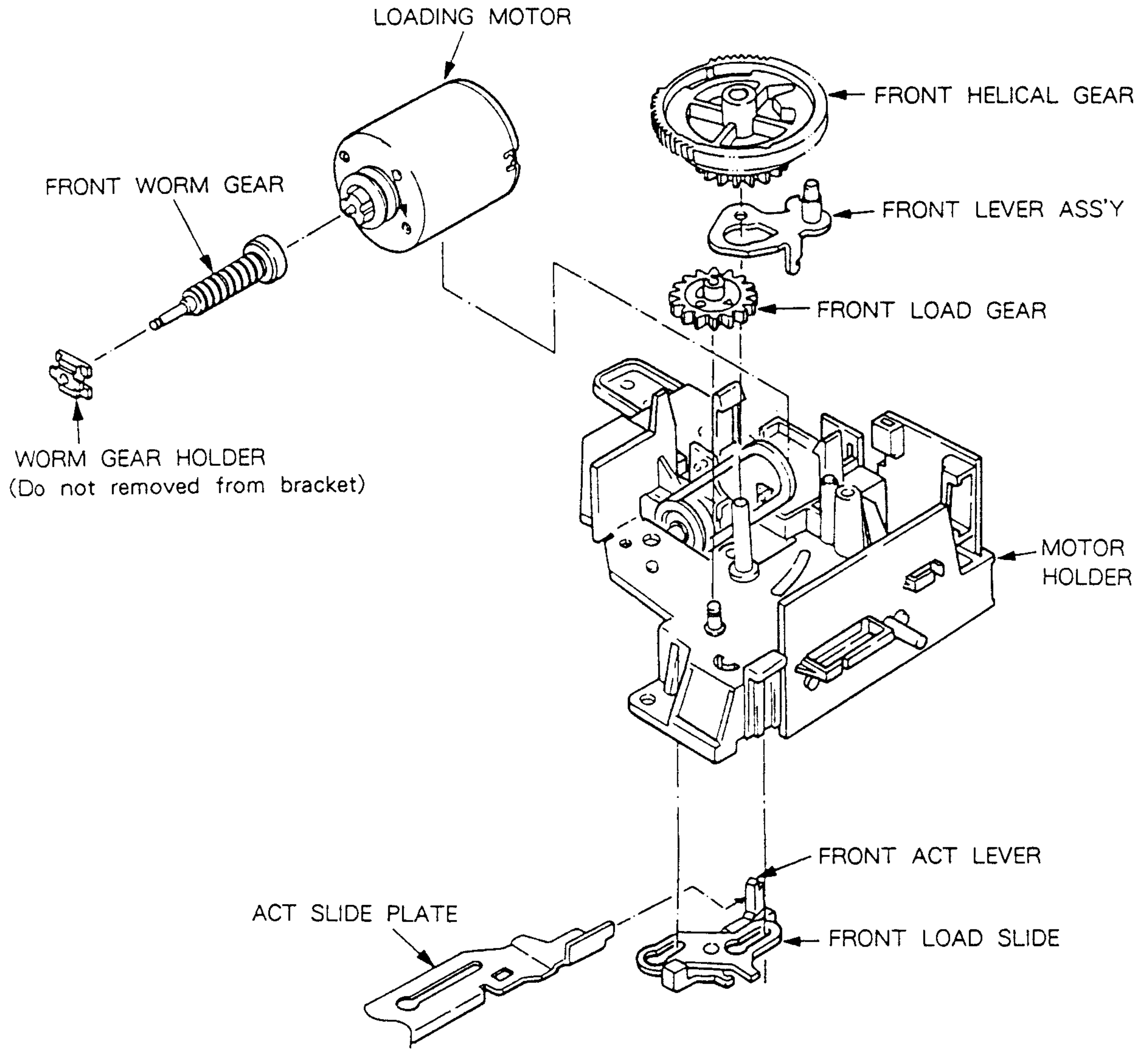
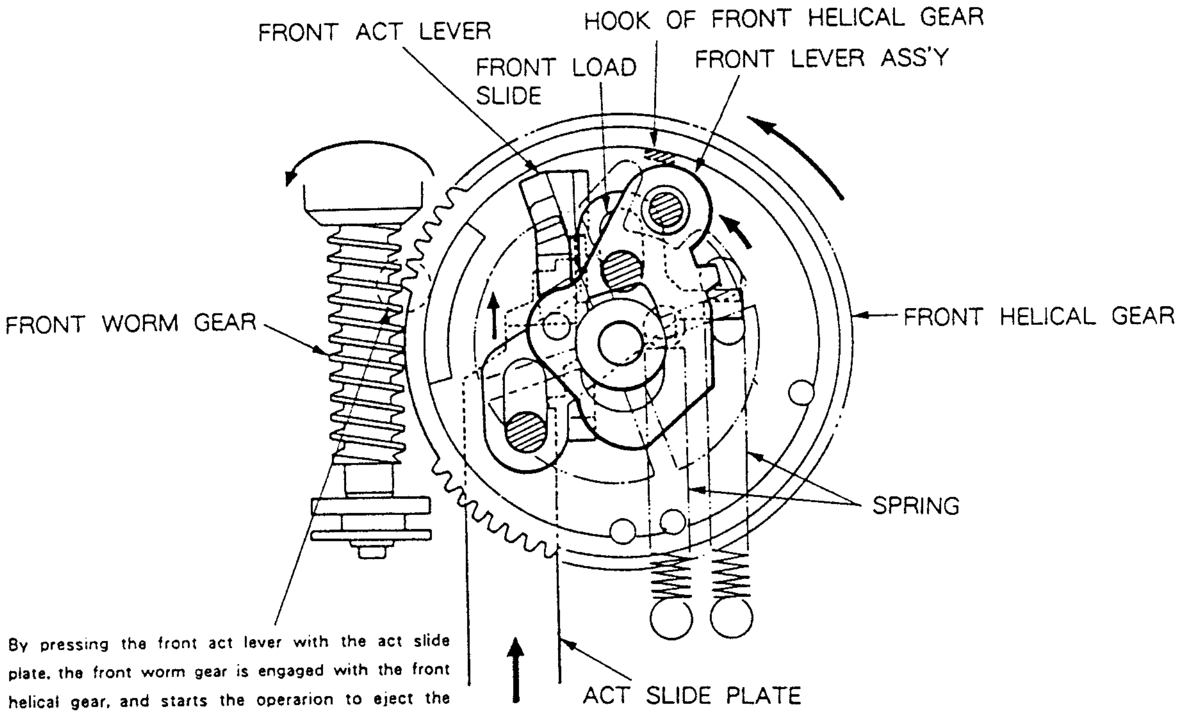

LOADING MOTOR
FRONT HELICAL GEAR
FRONT WORM GEAR
FRONT LEVER ASS'Y
FRONT LOAD GEAR
WORM GEAR HOLDER
(Do not removed from bracket)
MOTOR
HOLDER
FRONT ACT LEVER
ACT SLIDE PLATE
FRONT LOAD SLIDE

Fig. 2-16 FRONT LOADING DRIVE SELECTION MECHANISM


FRONT ACT LEVER
HOOK OF FRONT HELICAL GEAR
FRONT LOAD SLIDE
FRONT LEVER ASS'Y
FRONT WORM GEAR
FRONT HELICAL GEAR
SPRING
ACT SLIDE PLATE

By pressing the front act lever with the act slide plate, the front worm gear is engaged with the front helical gear, and starts the operarion to eject the cassette.

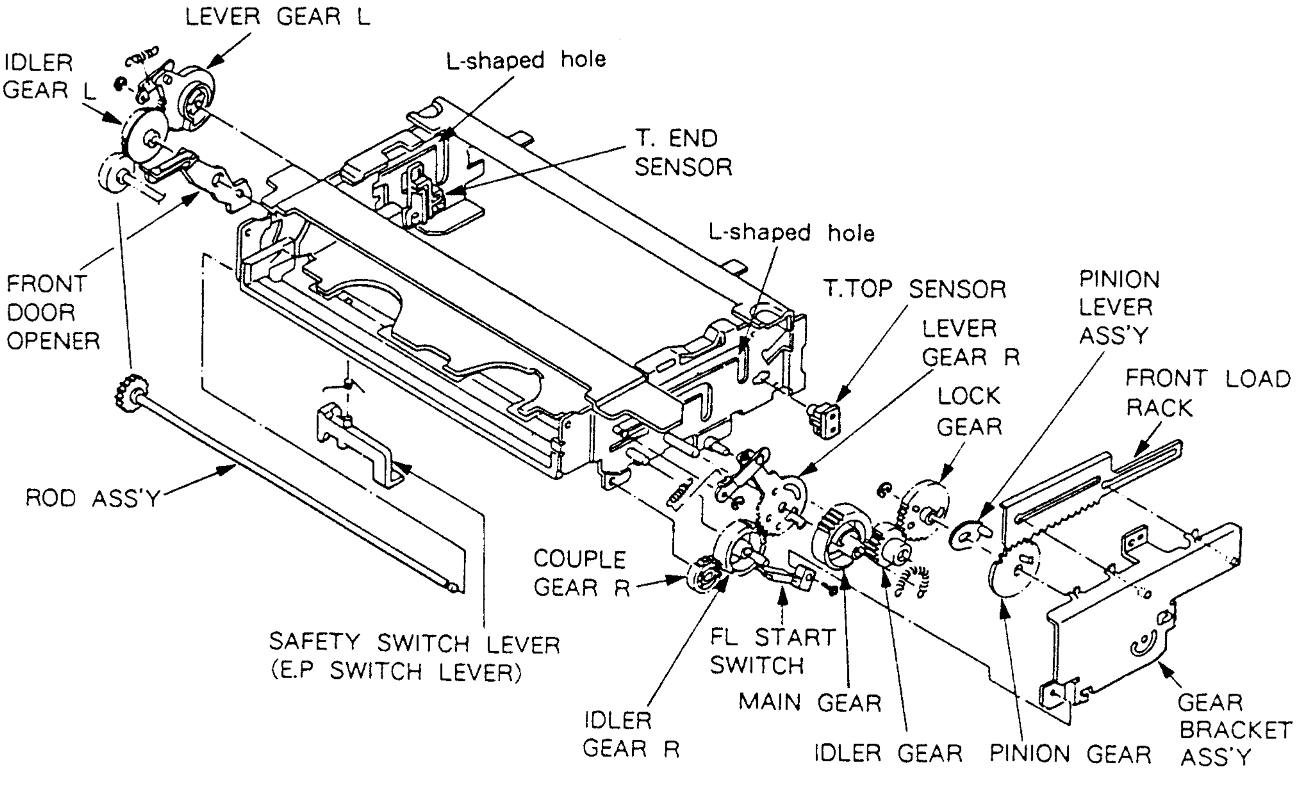
**Fig. 2-17 CASSETTE EJECTION START OPERATION** (See through top view)

## 2-5. CASSETTE HOLDER MECHANISM

### 2-5-1. Components

The exploded view of the cassette holder mechanism is shown in Fig. 2-18. This mechanism consists of a cassette tray for feeding the cassette tape to the specified position of the mechanism chassis, a side plate provided with L type holes for supporting and guiding it, the top plate for regulating the width of left and right, and a group of gears for driving the cassette tray.

The entire mechanism is of independent construction apart from the mechanism body. The holder is fixed on the mechanism chassis by inserting the pawls at two points and tightening the setscrews at two points, or at a total of four points.



LEVER GEAR L
IDLER GEAR L
L-shaped hole
T. END SENSOR
L-shaped hole
FRONT DOOR OPENER
T.TOP SENSOR
PINION LEVER ASS'Y
LEVER GEAR R
LOCK GEAR
FRONT LOAD RACK
ROD ASS'Y
COUPLE GEAR R
SAFETY SWITCH LEVER (E.P SWITCH LEVER)
FL START SWITCH
MAIN GEAR
IDLER GEAR R
IDLER GEAR
PINION GEAR
GEAR BRACKET ASS'Y

Fig. 2-18 EXPLODED VIEW OF THE CASSETTE HOLDER MECHANISM

### 2-5-2. Description of Cassette Holder

The cassette holder is of motor-less design, as the lowering of mechanism height and driving source are done by the loading motor of the mechanism body.

As a substitute for the worm gear system nitherto used in the major drive section for the drive selection mechanism mentioned in section 2-4., the RACK LOADING system is adopted in this cassette holder mechanism. By this mechanism the motor-less design can be realized. An exploded view of the mechanism is shown in Fig. 2-19. A description of the operation is made below along with Fig. 2-19. To press-fit the cassette tape after sending it onto the mechanism chassis, the PINION GEAR section is triple construction. The FRONT LOAD RACK side and the IDLER GEAR side are independently engaged. The PINION GEAR and the LOCK GEAR are connected from the PINION LEVER PIN riveted to the PINION LEVER. Even after feeding the cassette tape to the specified position of the mechanism chassis, the FRONT LOAD RACK slides, giving the rotation to the PINION GEAR which is engaged with the FRONT LOAD RACK. At that time, a pin is dropped into the groove section provided on the GEAR BRACKET ASS'Y.

The other LOCK GEAR is fixed by this PINION LEVER PIN, and the cassette tape is press-fitted onto the mechanism chassis by linked IDLER GEAR. The before-mentioned FRONT LOAD RACK and the PINION GEAR are set free after dropping the PINION LEVER PIN into the groove section. So, the drive force of the loading motor is sent to the mechanism body.

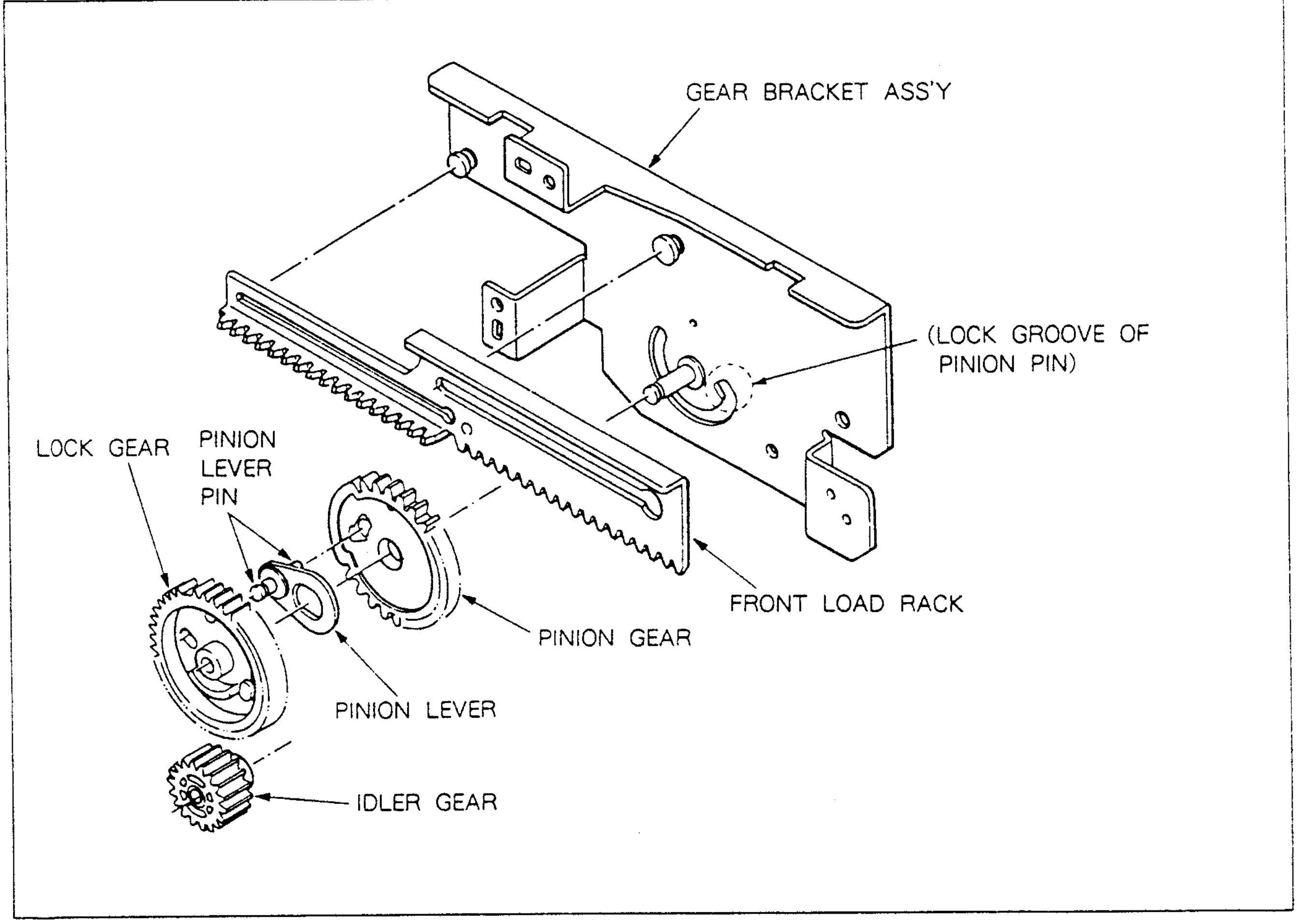


Fig. 2-19 RACK LOADING MECHANISM OF CASSETTE HOLDER

# 3. MECHANISM CONTROL

## 3-1. MODE ARRANGEMENT

This mechanism is arranged in such a mode layout as shown in Table. 3-1 and as described in section 2-1. The mode sensing switch described below is used for control of these modes.

## 3-2. MODE DETECTION SWITCH

For mode detecting one leaf switch (FL START SWITCH and one rotary switch (MECHANISM MODE SWITCH) are used in combination.

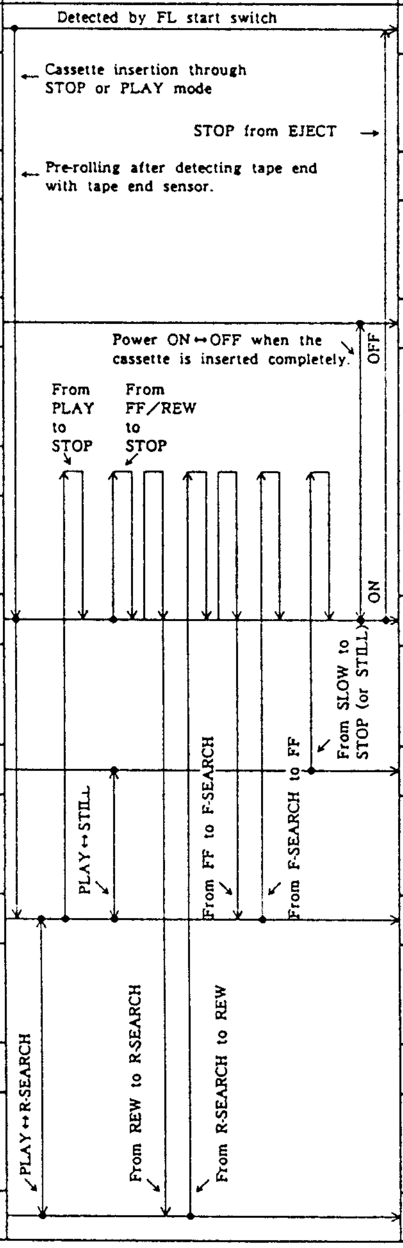
| Mechanism Mode | Mechanism Mode Switch 3 | Mechanism Mode Switch 2 | Mechanism Mode Switch 1 | HEX DATA | Function | Main Mode Shifting Conditions  | VTR Operation Mode |
|---|---|---|---|---|---|---|---|
| EJECT | - | - | - | | Eject position | Detected by FL start switch | EJECT |
| | | | | | Front loading/Unloading | Cassette insertion through STOP or PLAY mode<br>STOP from EJECT | |
| SHORT REW | 1 | 1 | 0 | | Take up operation in the tape end position | Pre-rolling after detecting tape end with tape end sensor. | Low side of Ⓗ. Sensed upon ON |
| | | | | | | | |
| INITIAL | 1 | 1 | 1 | ⑦ | Power off position | | Power off when tape is loaded completely |
| | | | | | Tape unloading position<br>Tape loading<br>Tape loading ending position | Power ON↔OFF when the cassette is inserted completely.<br>OFF<br>From PLAY to STOP<br>From FF/REW to STOP | |
| BRAKE | 0 | 0 | 1 | ① | Main brake applying position | | |
| | | | | | | ON | |
| STOP / FF/REW | 0 | 1 | 0 | ② | STOP waiting and FF/REW (the head motor rotation) | | STOP, FF/REW |
| | | | | | | From SLOW to STOP (or STILL) | |
| STILL | 0 | 1 | 1 | ③ | The positions of STILL, SLOW or F-ADV. | From FF to F-SEARCH<br>From F-SEARCH to FF | STILL, SLOW, F-ADV |
| | | | | | | PLAY↔STILL | |
| PLAY | 1 | 0 | 0 | ④ | From FWD direction Normal running mode | | PLAY, REC, F-SEARCH |
| | | | | | | | |
| IDLER | 1 | 0 | 1 | ⑤ | Forward/reverse changeover position | PLAY↔R-SEARCH<br>From REW to R-SEARCH<br>From R-SEARCH to REW | PAUSE |
| | | | | | | | |
| REV | 1 | 1 | 0 | ⑥ | From REV direction Normal running mode | | R-SEARCH |

Table 3-1

(1) Switch component

The mode switch consists of FL START SWITCH for detecting the cassette ejection and insertion, and MECHANISM MODE SWITCH for detecting the each mode position of the mechanism. As can be understood from Fig. 3-1, the MECHANISM MODE SWITCH rotates in excess of 360 degrees. Therefore, the sensing of a signal from the MECHANISM MODE SWITCH is done by the leaf switch.

In the P88 and P89 mechanisms, incidentally, short REW position is detected by the FL END SW, but in the P90 mechanism, the FL END SWITCH is not required due to a change in the internal structure of the MECHANISM MODE SWITCH.

(2) Mechanism mode switch

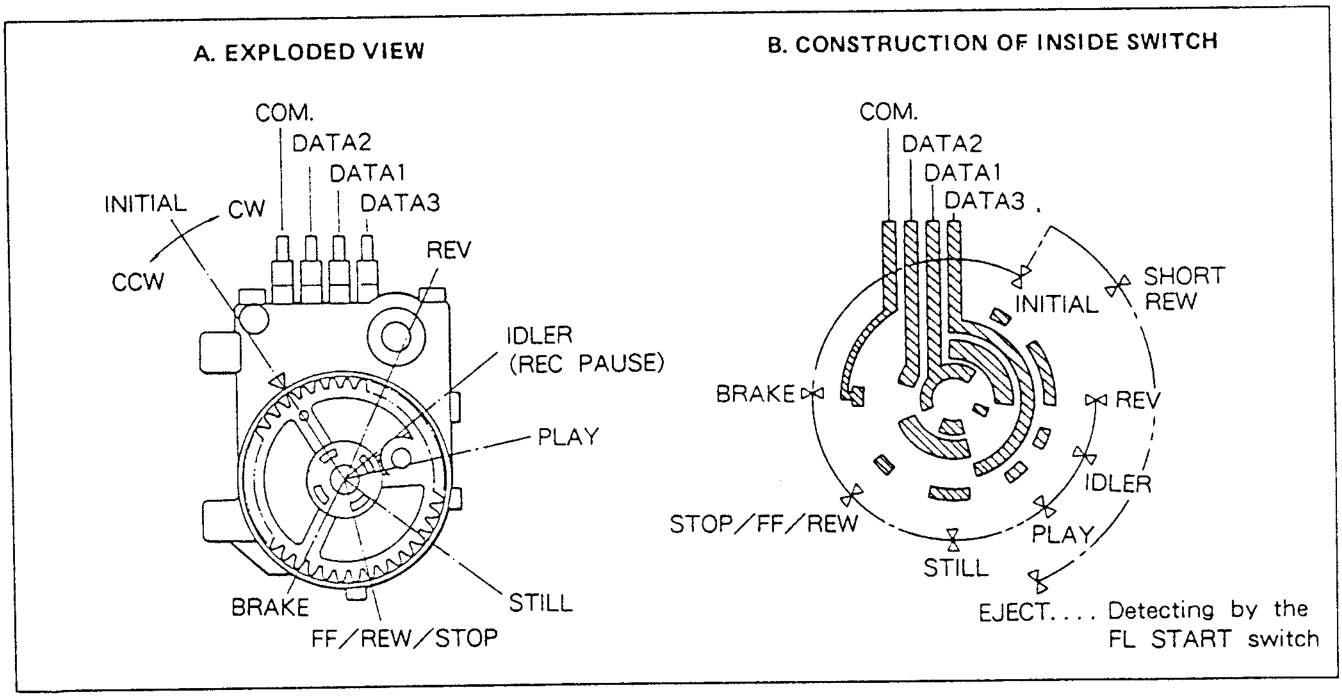
The mechanism mode switch consists of four terminals, namely, COM, DATA1, DATA2, and DATA3. These are processed as 3-bit signals for discrimination of seven modes.

The MECHANISM MODE SWITCH is not interchangeable with the hither to available black switch due to a change in its internal structure. Be sure therefore to use a blue switch.

## 3-3. CONSIDERATION TO FULL LOADING

① In the normal stop condition, the head drum is rotated to facilitate the start-up of the image at the time of playback, but it is conceivable that this is left undisturbed for an extended period of time. This may result in wear of the video head. For this reason, when five minutes elapse from the stop condition, the head drum stops rotating.

② To prevent the tape from being caught in the head drum due to dew forming, etc., the tape is housed in the unloaded cassette when turning the power off.



A. EXPLODED VIEW

B. CONSTRUCTION OF INSIDE SWITCH

COM.
DATA2
DATA1
DATA3
INITIAL
CW
CCW
REV
IDLER
(REC PAUSE)
PLAY
BRAKE
STILL
FF/REW/STOP
COM.
DATA2
DATA1
DATA3
INITIAL
SHORT REW
BRAKE
REV
IDLER
STOP/FF/REW
PLAY
STILL
EJECT. . . . Detecting by the FL START switch

Fig. 3-1 MECHANISM MODE SWITCH (ROTARY SWITCH)

# 4. MECHANISM MAINTENANCE AND CHECKING

## 4-1. PERIODIC CHECKING AND MAINTENANCE ITEMS AND SERVICE JIGS

The following maintenance and periodic checking procedures are recommended to ensure proper operation, and to protect the tape from dirt and damage. Also, these procedures should always be followed after repairing the unit.

### 4-1-1. Periodic Check Items

○ Cleaning ◎ Confirmation △ Lubrication

| Part | Usage Time (hours) | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tape Guide System | Tape running surfaces | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| | ACE head | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | |
| | Drum (cylinder) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Head life depends heavily on operating conditions. |
| Drive System | Loading belt | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | |
| | Reel drive belt | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | |
| | Intermediate gear, pulley axles | | △ | | △ | | △ | | △ | | △ | Absolutely avoid oil on tape running surfaces. |
| | Capstan axles | | △ | | △ | | △ | | △ | | △ | |
| | Loading motor | | ◎ | | ◎ | | ◎ | | ◎ | | ◎ | |
| Perfor-mance Check | Back tension torque | | ◎ | | ◎ | | ◎ | | ◎ | | ◎ | 50 ± 10gcm. |
| | Brake system | | ◎ | | ◎ | | ◎ | | ◎ | | ◎ | |
| | FF, REV, PLAY torque | | ◎ | | ◎ | | ◎ | | ◎ | | ◎ | FF : 600 gcm and over<br>REW:750 gcm and over<br>REV : 150 to 240 gcm<br>PLAY: 80 to 140 gcm |

**Note:** The back tension torque is the value that has been measured by the cassette torque meter (Back tension, REW: VHT-063S) (REV: VHT-404S).
The torque of FF, REV, REW, and PLAY represent those measured with them locked by the torque gauge.
FF and REW are values 2 seconds after starting.
Torque Tape: VHT-063S (J-6082-066-A)
VHT-404S (J-6082-067-A)

### 4-1-2. Cleaning

① Drum (COMPL CYLINDER) and Video Heads (See Fig. 4-1-1.)

1) Wrap a chamois leather around your finger and moisten it with methyl alcohol.
2) Move the chamois leather to left and right several times on the video head to clean. There is a video head also on the opposite side, so clean it likewise. In Hi-Fi models, clean the audio head also.
3) Clean the tape path surface of the cylinder in the same way.

**Note :** Always turn power off before cleaning. Do never move the chamois leather vertically or apply too much force to the head ; it may be damaged.

② Cleaning of the Tape Guide System (See Fig. 4-1-2.)

1) Set the EJECT mode and clean the tape guide system (tape guides, impedance roller, FTE head, ACE head, pinch rollers, capstan axles, etc.) with a chamois leather moistened with methyl alcohol.

**Note :** Make sure that no oil, grease, etc. adhere to the chamois leather and that heads are not damaged.

③ Cleaning of the Drive System

1) Clean the drive system (loading belt, reel drive belt, pulley, supply reel table, etc.) with a soft cloth moistened with methyl alcohol.

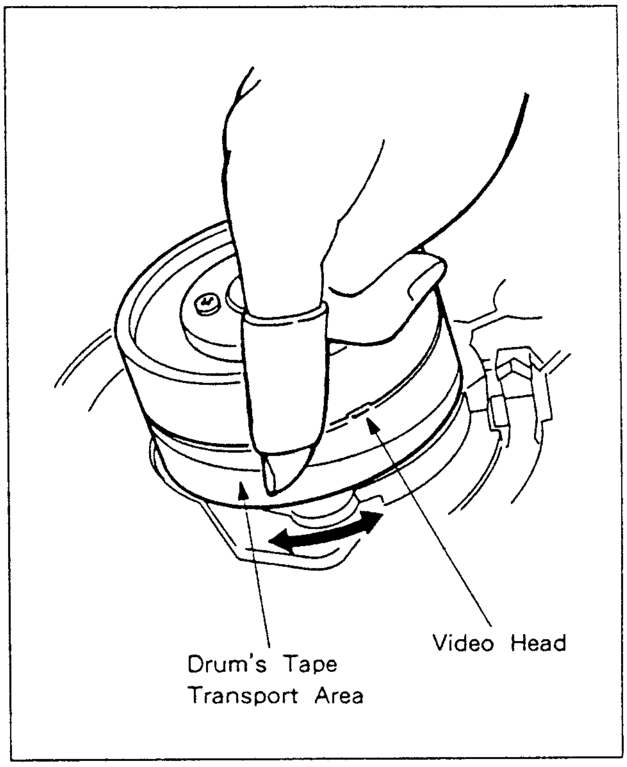

Video Head
Drum's Tape
Transport Area

Fig. 4-1-1.

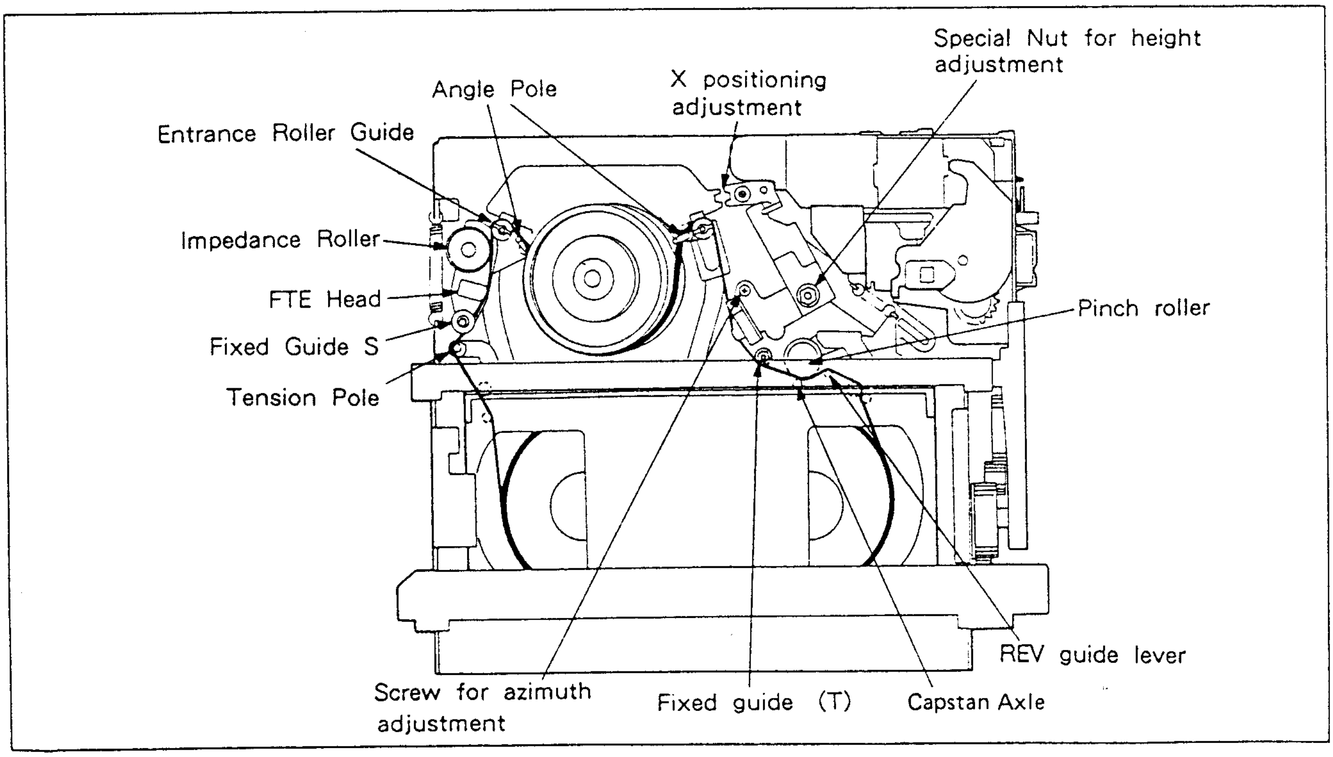
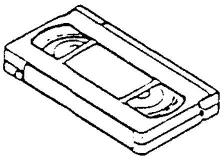

Special Nut for height adjustment
Angle Pole
X positioning adjustment
Entrance Roller Guide
Impedance Roller
FTE Head
Pinch roller
Fixed Guide S
Tension Pole
REV guide lever
Screw for azimuth adjustment
Fixed guide (T)
Capstan Axle

Fig. 4-1-2. Cleaning

### 4-1-3. Service Jigs

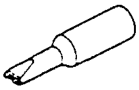
| No. | Jig | Jig No. | Remarks |
|---|---|---|---|
| 1 | Alignment tape (PAL) | H-7099-052-H | PAL-NORMAL |
| 2 | Eccentric screwdriver (VHJ-0003) | J-6082-044-A | For tape path adjustment |
| 3 | Nut box (VHJ-0048) | J-6082-045-A | For tape path adjustment |
| 4 | Torque gauge | H-7099-039-H | For reel take-up torque measurement |
| 5 | Torque gauge adapter | H-7099-035-H | For reel take-up torque measurement |
| 6 | Fixed guide height gauge (VHJ-0053) | J-6082-052-A | For fixed gaude (S) height adjustment |
| 7 | Torque gauge screwdriver (VHJ-0014) | J-6082-047-A | For screw fastening torque adjustment |
| 8 | 3mm dia. bit for torque screwdriver (VHJ-0045) | J-6082-048-A | Spare bit for the torque gauge screwdriver |
| 9 | Video head removing tool (VHJ-0041) | J-6082-049-A | For upper drum removal |
| 10 | Mode selector (VHJ-0050) | J-6082-050-A | For mechanism mode selection |
| 11 | Master plane | H-7099-279-H | Reel table height |
| 12 | Reel disc height jig | H-7099-038-H | Reel table height |
| 13 | Mode selector relay board (VHJ-0075) | J-6090-008-A | Relay board for mode selector |
| 14 | PAL torque cassette (VHT-063S) (PAL) | J-6082-066-A | For back tension torque |
| 15 | 26-pin flexible flat cable (VHJ-0064) | J-6090-006-A | Spare cable for mode selector |
| 16 | 7-wire flat cable (VHJ-0076) | J-6090-009-A | Spare cable for relay board |
| 17 | REV guide lever removing tool (VHJ-0073) | J-6090-007-A | For REV guide lever removal |
| 18 | Mode selecter relay baord (VHJ-0089) | VHJ- | Relay board for mode selector [For compact size model (width : 360mm)] |

H-7099-052-H



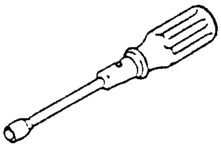
No. 1

J-6082-044-A (VHJ-0003)



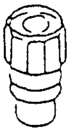
No. 2

J-6082-045-A (VHJ-0048)



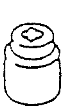
No. 3

H-7099-039-H



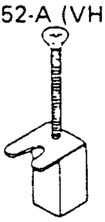
No. 4

H-7099-035-H



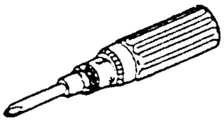
No. 5

J-6082-052-A (VHJ-0053)



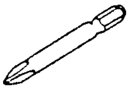
No. 6

J-6082-047-A (VHJ-0014)



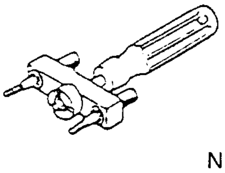
No. 7

J-6082-048-A (VHJ-0045)



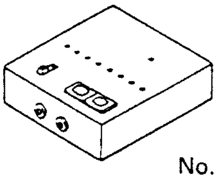
No. 8

J-6082-049-A (VHJ-0041)



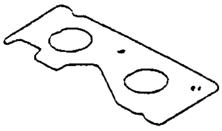
No. 9

J-6082-050-A (VHJ-0050)



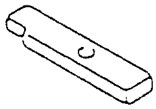
No. 10

H-7099-279-H



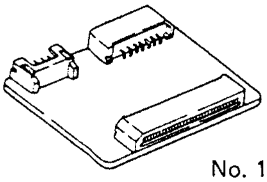
No. 11

H-7099-038-H



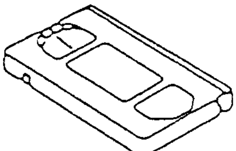
No. 12

J-6090-008-A (VHJ-0075)



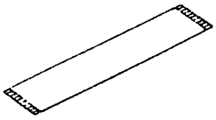
No. 13

J-6082-066-A



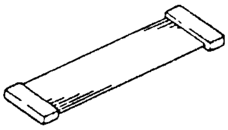
No. 14

J-6090-006-A (VHJ-0064)



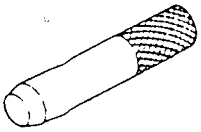
No. 15

J-6090-009-A (VHJ-0076)



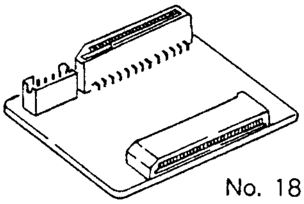
No. 16

J-6090-007-A (VHJ-0073)



No. 17

VHJ-0089



No. 18

## 4-2. MODE SELECTOR (VHJ-0050) HANDLING INSTRUCTIONS

The mode selector drives the loading motor of the P88 mechanism with its internal batteries (UM-2 × 4 = 6V), using LEDS to indicate the mode (EJECT, INITIAL, BRAKE, STOP/REW/FWD, STILL, PLAY, IDLER, REV) simultaneously with EJECT⇔REV mode changes.
Instead of the internal batteries, an external DC 6V power supply can also be used.

### 4-2-1. Part Names (See Fig. 4-2-1)

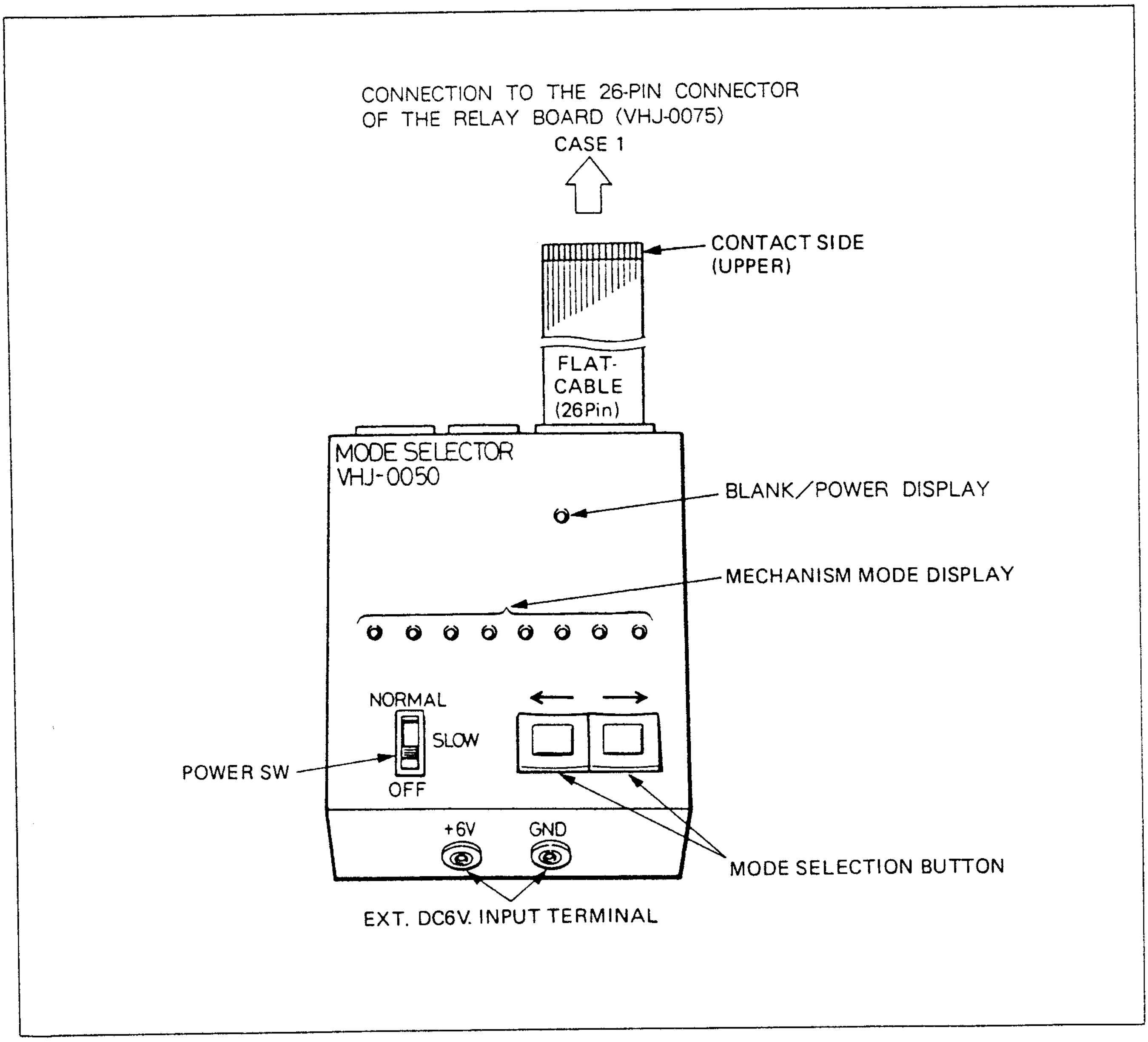

CONNECTION TO THE 26-PIN CONNECTOR
OF THE RELAY BOARD (VHJ-0075)
CASE 1
CONTACT SIDE (UPPER)
FLAT-CABLE (26Pin)
MODE SELECTOR
VHJ-0050
BLANK/POWER DISPLAY
MECHANISM MODE DISPLAY
NORMAL
SLOW
OFF
POWER SW
+6V
GND
MODE SELECTION BUTTON
EXT. DC6V. INPUT TERMINAL

Fig. 4-2-1

### 4-2-2. Connection Method 1 (See Fig. 4-2-2) (For "Mid mount" model)

1) Remove the 7-wire cable connected from the system control circuit to the connector (CN822) of the MC-3 board.
2) Connect the 7-wire cable (VHJ-0076) between the connector (CN822) of the MC-3 board and the 7-pin connector of the Mode Selector Connection Board (VHJ-0075).
3) Remove the 6-wire cable extending from the cassette holder section from the connector of the System Control Circuit Board and connect it to the 6-pin connector of the Mode Selector Connection Board (VHJ-0075).
4) Connect a supplied 26-pin flat cable (VHJ-0064) of the mode selector (VHJ-0050) between the mode selector body and the 26-pin connector of the Connection Board (VHJ-0075).

**Note:** Care should be taken to avoid mistaking the direction of the contacting side when connecting a flexible flat cable.

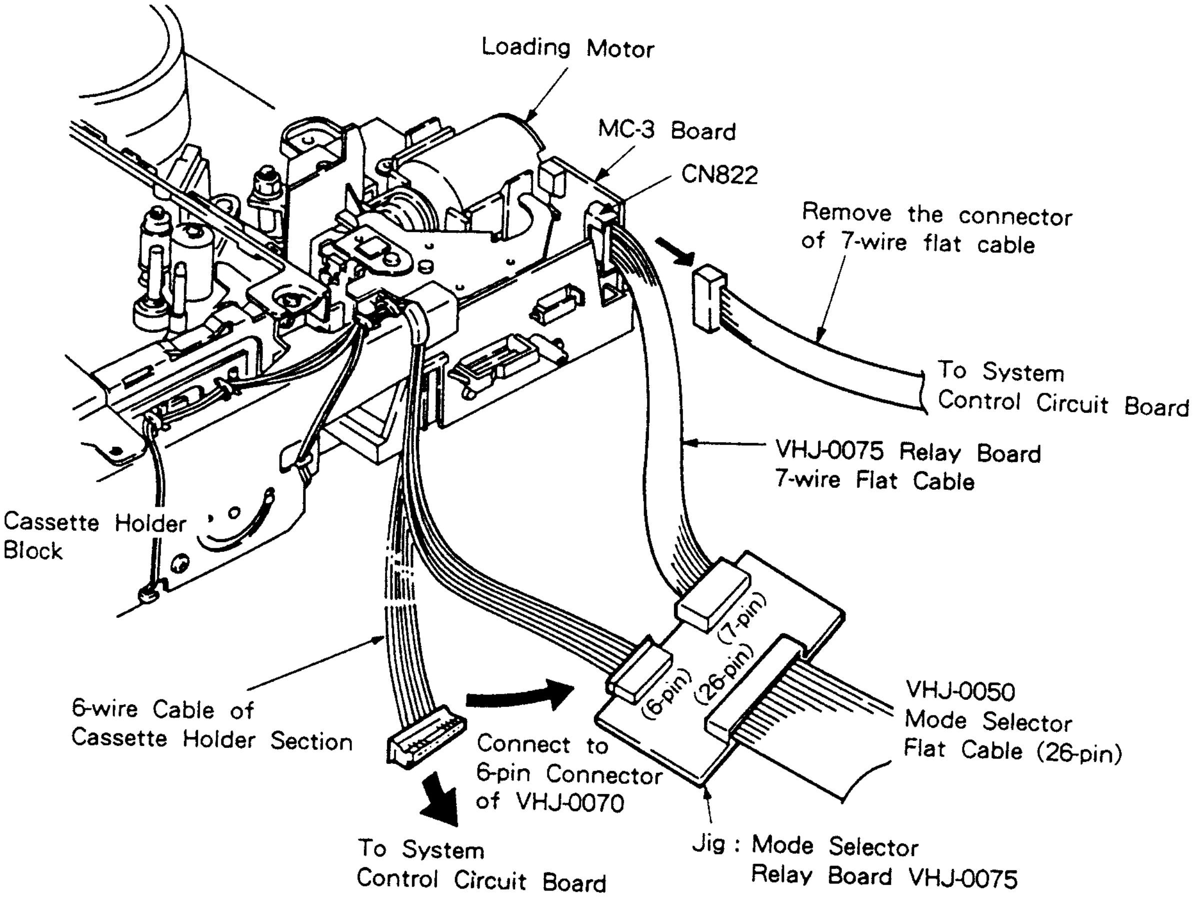
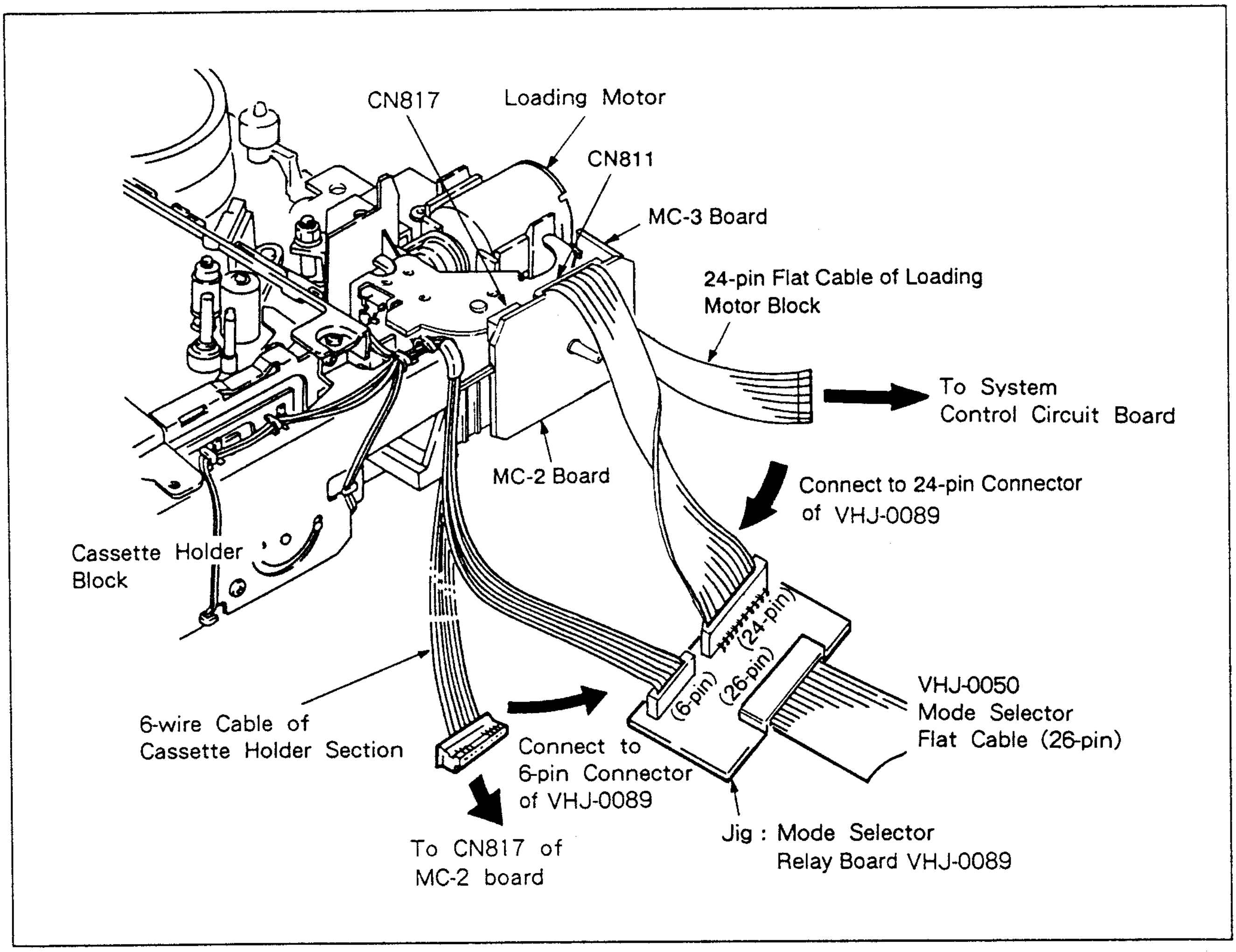

Loading Motor
MC-3 Board
CN822
Remove the connector of 7-wire flat cable
To System Control Circuit Board
VHJ-0075 Relay Board 7-wire Flat Cable
Cassette Holder Block
(7-pin)
(26-pin)
(6-pin)
VHJ-0050 Mode Selector Flat Cable (26-pin)
6-wire Cable of Cassette Holder Section
Connect to 6-pin Connector of VHJ-0070
To System Control Circuit Board
Jig : Mode Selector Relay Board VHJ-0075

Fig. 4-2-2. Connection

### 4-2-3. Connection Method 2 (See Fig. 4-2-3) (For compact size model)

1) Remove the 24-pin flat cable extending from the COMPL MC-2 board connector (CN811) from the connector of the system control circuit board, and connect it to the 24-pin connector of mode selector relay board (VHJ-0089).
2) Remove the 6-wire cable extending from the cassette holder section from the connector of the MC-2 board connector (CN817), and connect it to the 6-pin connector of the mode selector relay board (VHJ-0089).
3) Connect a supplied 26-pin flat cable (VHJ-0064) of the mode selector (VHJ-0050) between the mode selector body and the 26-pin connector of the mode selector relay board (VHJ-0089).

**Note:** Care should be taken to avoid mistaking the direction of the contacting side when connecting a flexible flat cable.



CN817
Loading Motor
CN811
MC-3 Board
24-pin Flat Cable of Loading Motor Block
To System Control Circuit Board
MC-2 Board
Connect to 24-pin Connector of VHJ-0089
Cassette Holder Block
(24-pin)
(26-pin)
(6-pin)
VHJ-0050 Mode Selector Flat Cable (26-pin)
6-wire Cable of Cassette Holder Section
Connect to 6-pin Connector of VHJ-0089
To CN817 of MC-2 board
Jig : Mode Selector Relay Board VHJ-0089

Fig. 4-2-3. Connection

### 4-2-4. Handling Method

1) Keep the right side (⇨) of the mode selector key pressed, and the mode will change in the following sequence : EJECT⇨INITIAL⇨BRAKE⇨STOP/REW/FWD⇨STILL⇨PLAY⇨IDLER⇨REV.
2) When changing the mode in the REV…⇨EJECT direction, press the left side (⇦) of the mode selector key until the desired mode is indicated.
3) In the mid position of each mode during a shift to other mode, the "BLANK" LED lights. But the "PLAY", "IDLER", "REV" LEDs light between the EJECT mode and the INITIAL mode. Be sure therefore to check the mechanism body to see just what state the mechanism is in.
   Incidentally, if the mode selector is not connected to the mechanism, the "BLANK" LED lights to indicate the power ON.
4) The SLOW position of POWER switch makes relatively slow motions in comparison with the NORMAL position.

**Note 1 :** The mode selector drives the loading motor only, not affecting the head drum motor and the capstan motor. When using the mode selector with a cassette loaded, turn the capstan motor manually to remove tape slackness, preventing tape entanglement.

**Note 2 :** If the left side (⇦) of the mode selector (VHJ-0050) key is kept pressed with the COMPL cassette mechanism removed, it might get past the EJECT position, causing the front helical gear and the front worm gear to get disengaged.

In this condition, since the front helical gear will not turn even if the right side (⇨) of the mode selector key is pressed, rotate (push) the front helical gear clockwise by hand and engage it with the front worm gear. In this condition, as there is a misalignment between the mechanism main body operation mode (indicated by the mode selector indicator lamps) and the front loading mechanism operation mode, keep the right side (⇨) of the mode selector key pressed until the front helical gear and the front loading gear of the front loading mechanism get back to the initial condition (Refer to A and B in Fig. 4-5-5 of section 4-5-2. Loading Motor).

When the front loading mechanism returns to the initial condition, operation mode of the whole mechanism gets back to normal, matching the mode shown by the mode selector indicator lamps (mode is not properly indicated, however, during EJECT to INITIAL).

Sometimes, engagement of the front helical gear with the front worm gear is delayed, operation mode of the mechanism main body gets too much ahead and the front loading mechanism mode cannot be switched to the initial condition. In that case, press the left side (⇦) of the mode selector key, setting the mechanism main body operation mode back to EJECT (rotation of the mode cam and the MAIN CAM stops).

**Note 3 :** The mode selector indicator lamps show the mechanism operation mode, but the EJECT lamp may sometimes fail to indicate the actual mechanism operation mode.

# 5. MECHANISM DISMANTLING AND REASSEMBLING

## 5-1. MECHANISM MAIN UNIT (See Fig. 5-1-1.)

**1. Removal**

1) Remove the connectors of the COMPL MC-3 and the COMPL HEAD BRACKET.
2) Remove the flexible cable ① connecting the COMPL CYLINDER to the PRE-AMP UNIT ③ (See Fig. A).
3) Remove the two screws ②, then remove the PRE-AMP UNIT ③.
4) Remove the screw ④, then remove the PRE-AMP. BRACKET ⑤.
5) Remove the two screws ⑥.
6) Remove the three screws ⑦ and two screws ⑩, then lift up the mechanism main unit and remove it.
   Since the TRAY ⑧ obstructs removal of the two front screws ⑩, move the TRAY LOCK LEVER ⑨ in the direction of the arrow to unlock, then slide the TRAY ⑧ before removing the screws. (See Fig. B)

**Note :** Shape of the PRE-AMP UNIT ③ and the PRE-AMP. BRACKET ⑤ differ depending on the model.

**2. Remounting**

1) Mount the mechanism main unit onto the chassis with the three screws ⑦ and two screws ⑩.
2) Tighten the two screws ⑥.
3) Mount the PRE-AMP. BRACKET ⑤ with the two screws ④.
4) Mount the PRE-AMP UNIT ③ and the ground lug with the two screws ② (some models are not provided with a ground lug).
5) Insert the flexible cable ① into the connector of the PRE-AMP UNIT.
6) Connect the connectors of COMPL MC-3 and COMPL HEAD BRACKET.

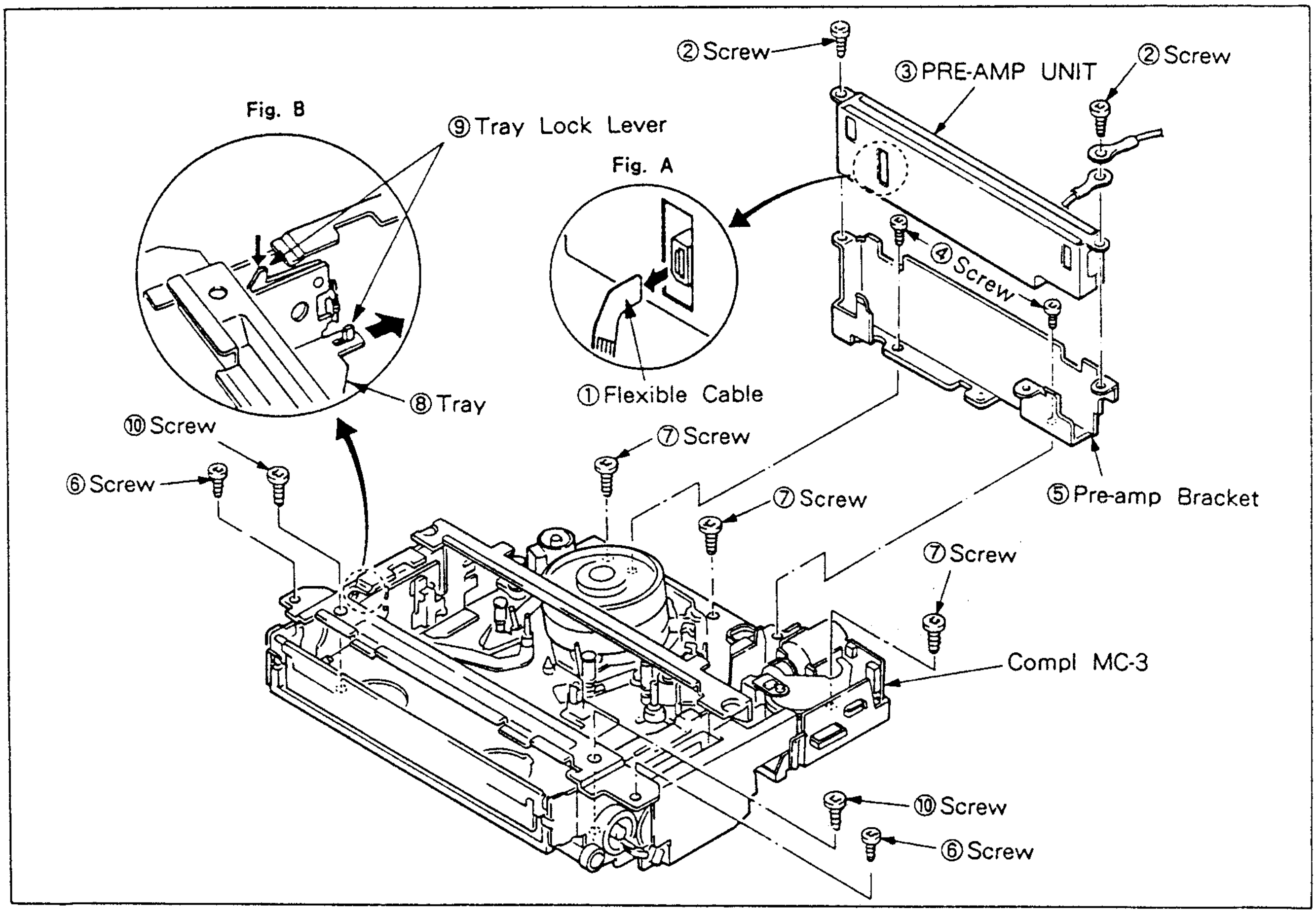

②Screw
③PRE-AMP UNIT
②Screw
Fig. B
⑨Tray Lock Lever
Fig. A
④Screw
⑧Tray
①Flexible Cable
⑩Screw
⑦Screw
⑥Screw
⑦Screw
⑤Pre-amp Bracket
⑦Screw
Compl MC-3
⑩Screw
⑥Screw

Fig. 5-1-1 Mecahnism Main Unit

## 5-2. CASSETTE HOLDER MECHANISM

### 5-2-1. COMPL Cassette Mechanism (See Fig. 5-2-1.)

1. **Removal**

1) Set the video main unit to the EJECT completed mode.
2) Pull out the connectors (6-PIN CONNECTOR connected to the system control circuit board, ACE HEAD CONNECTOR, and FTE HEAD CONNECTOR) from CASSETTE HOLDER.
3) Remove the two screws ①.
4) Remove the two screws ②.
5) Lift up the COMPL CASSETTE MECHANISM ④ back a little and remove the two hooks ③ on the front (See Fig. B). When doing so, make sure that the SAFETY SWITCH LEVER is not caught by the mechanism chassis.

2. **Remounting**

1) Set the chassis section mechanism to the EJECT mode with the mode selector (VHJ-0050) (looking from above, match the front loading gear hole ⑤ with the MOTOR HOLDER hole ⑥ as shown in Fig. A).
2) Set the COMPL CASSETTE MECHANISM ④ to the EJECT completed mode.
3) Mount the COMPL CASSETTE MECHANISM ④ onto the mechanism chassis, aligning it with the protuberance.
   Match positions of the FRONT LOADING GEAR △ mark ⑦ and the RACK EJECT mark ⑧. (See Fig. A.)
4) Fix to the mechanism chassis with the two screws ②.
5) Fix to the chassis with the screw ①.
6) Connect to the various connectors.

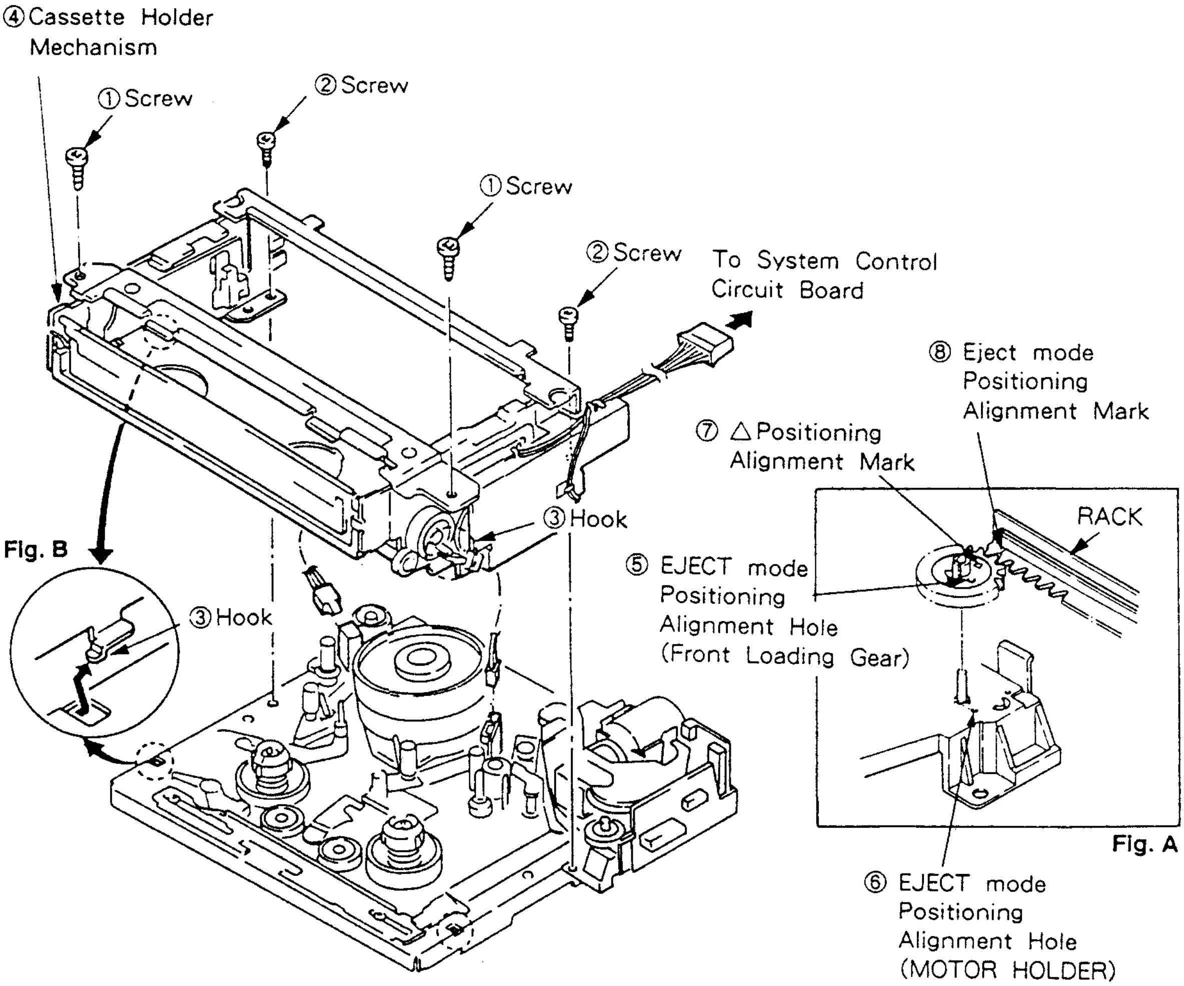

④Cassette Holder Mechanism
①Screw
②Screw
①Screw
②Screw
To System Control Circuit Board
⑧ Eject mode Positioning Alignment Mark
⑦ △Positioning Alignment Mark
RACK
③Hook
Fig. B
⑤ EJECT mode Positioning Alignment Hole (Front Loading Gear)
③Hook
Fig. A
⑥ EJECT mode Positioning Alignment Hole (MOTOR HOLDER)

Fig. 5-2-1 Compl Cassette Mechanism

### 5-2-2. Gear Bracket Ass'y (See Fig. 5-2-2.)

#### 1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the three screws ①, then remove the GEAR BRACKET ASS'Y ② as shown in Fig. A.
3) Remove the E ring ③, then remove the LOCK GEAR ④, the PINION LEVER ASS'Y ⑤, the PINION GEAR ⑥ and the RACK ⑦, in that order.

#### 2. Remounting

1) Apply grease to the shaft ⑧ and the two pins ⑨ of the GEAR BRACKET ASS'Y.
2) Apply grease to the pin ⑩ of the PINION LEVER ASS'Y.
3) Apply grease to the toothed part of the RACK ⑦.
4) Fit the RACK ⑦ onto the two pins ⑨. Align the positioning alignment hole ⑪ to the positioning alignment hole ⑫ of the GEAR BRACKET.
5) Mount the PINION GEAR ⑥, PINION LEVER ASS'Y ⑤, and LOCK GEAR ④ in the shaft ⑧ in the order mentioned.
   Align the positioning alignment holes ⑬ of PINION GEAR and LOCK GEAR with the positioning alignment hole ⑪ of RACK at that time.
6) Mount the E ring ③ onto the shaft ⑧.
7) Set the GEAR BRACKET ASS'Y ② to the dowel and mount it using three screws ①.
   Align the positioning alignment hole Ⓐ of the IDLER GEAR with the positioning alignment hole Ⓑ of the SIDE BOARD as shown in Fig. 5-2-3 at this time.
   Also align the positioning alignment holes ⑬ of PINION GEAR and LOCK GEAR with the positioning alignment hole ⑫ of GEAR BRACKET by referring to Fig. 5-2-2. After mounting them, check to be sure that FL START SWITCH ⑭ is in the ON state shown in Fig. A.
8) Remount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

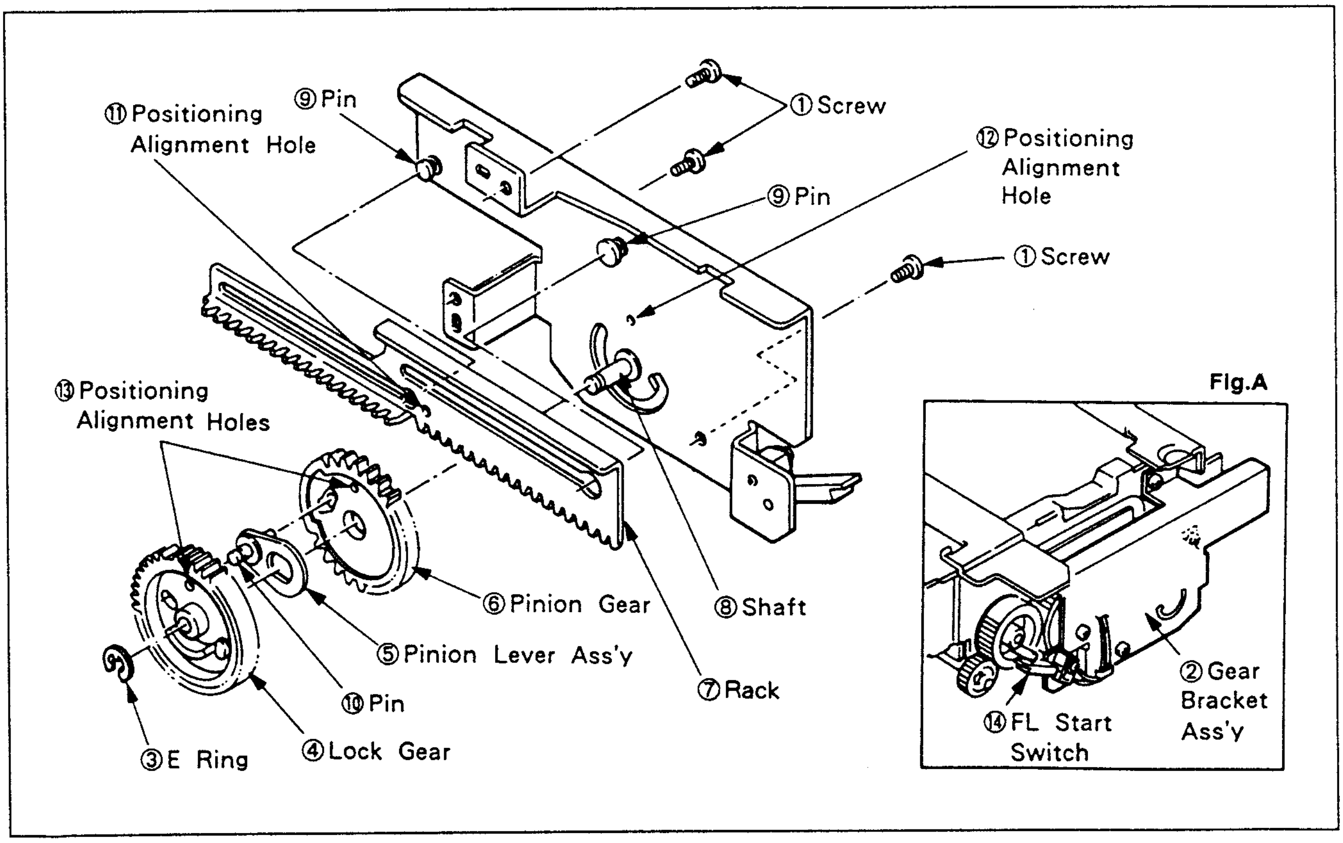

⑪Positioning Alignment Hole
⑨Pin
①Screw
⑫Positioning Alignment Hole
⑨Pin
①Screw
⑬Positioning Alignment Holes
⑥Pinion Gear
⑧Shaft
⑤Pinion Lever Ass'y
⑦Rack
⑩Pin
③E Ring
④Lock Gear
Fig.A
②Gear Bracket Ass'y
⑭FL Start Switch

Fig. 5-2-2. Gear Bracket Ass'y

### 5-2-3. Cassette Drive Gear (Right) (See Fig. 5-2-3.)

#### 1. Removal

1) Remove the COMPL CASSETTE MECHANISM and the GEAR BRACKET ASS'Y as instructed in 5-2-1. and 5-2-2., respectively.
2) Remove the IDLER GEAR ①.
3) Remove the SPRING COIL ②, then remove the MAIN GEAR ③.
4) Remove the E ring ④, then remove the LEVER GEAR ASS'Y R ⑤.
5) Open the hook ⑥ and remove the COUPLE GEAR R ⑦. Take care not to open the hook ⑥ too much, otherwise it may get deformed or broken. If it does, replace it.
6) Remove the IDLER GEAR R ⑧.

#### 2. Remounting

1) Apply grease to gear parts that undergo friction.
2) Mount the IDLER GEAR R ⑧ onto the axle ⑨.
3) Mount the COUPLE GEAR R ⑦ onto the ROD ASS'Y axle ⑩. When doing so, match the couple gear position with the IDLER GEAR R ⑧ as shown in Fig. A.
4) Mount the LEVER GEAR ASS'Y R ⑤ onto the axles ⑪ and ⑫. Match position to the IDLER GEAR R ⑧ as shown in Fig. A.
5) Mount the E ring ④ onto the axle ⑫.
6) Mount the MAIN GEAR ③ onto the axle ⑪. When doing so, match position to the IDLER GEAR R ⑧ as shown in Fig. A.
7) Hook the SPRING COIL ② to the notch ⑬ in the MAIN GEAR R ③ and the LEVER GEAR ASS'Y R.
8) Mount the IDLER GEAR ① onto the axle ⑭. When doing so, match position to the MAIN GEAR as shown in Fig. A.
9) Mount the GEAR BRACKET ASS'Y and the COMPL CASSETTE MECHANISM ASS'Y as instructed in 5-2-2. and 5-2-1., respectively.

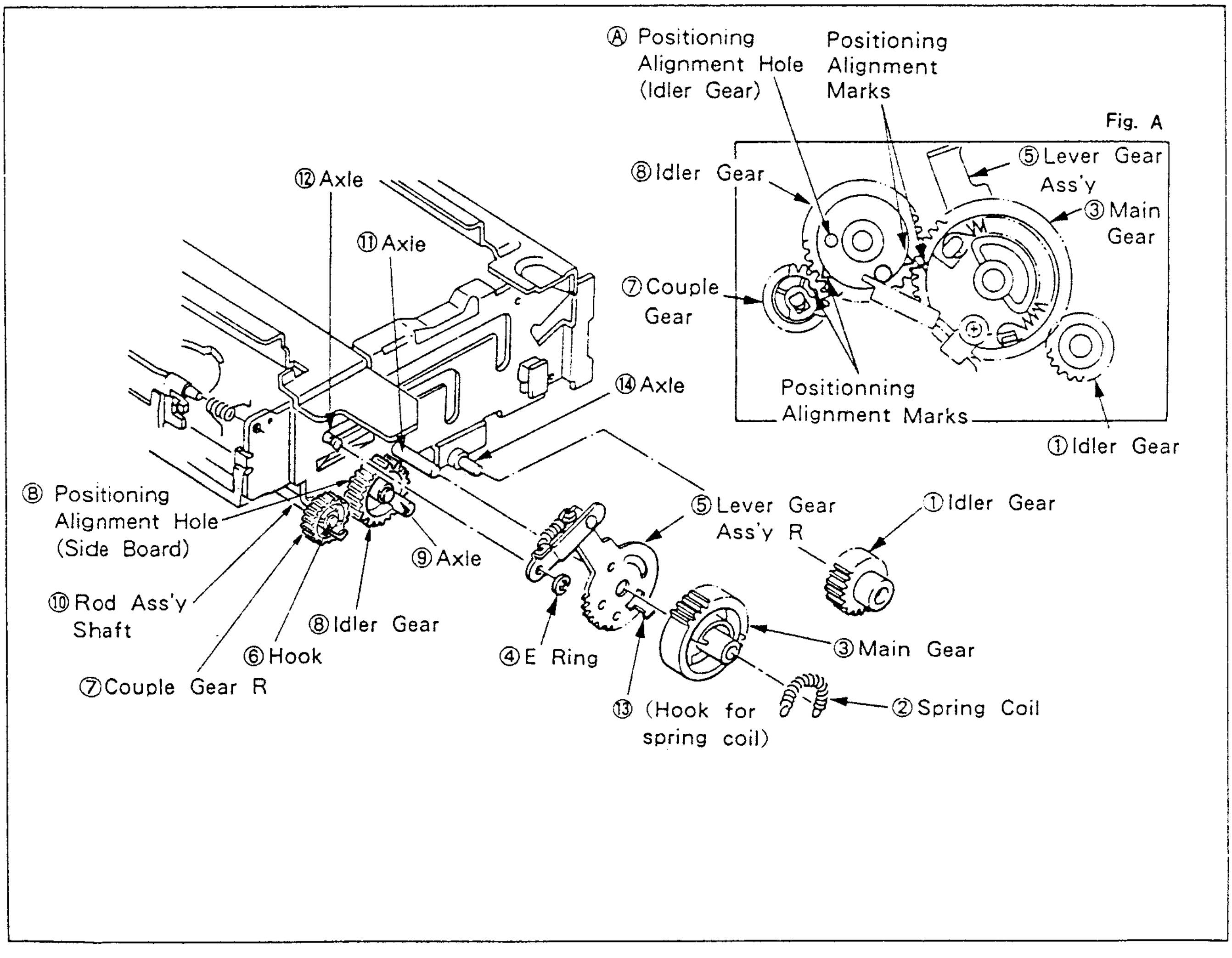

Ⓐ Positioning Alignment Hole (Idler Gear)
Positioning Alignment Marks
Fig. A
⑤Lever Gear Ass'y
③Main Gear
⑧Idler Gear
⑦Couple Gear
Positionning Alignment Marks
①Idler Gear
⑫Axle
⑪Axle
⑭Axle
Ⓑ Positioning Alignment Hole (Side Board)
⑨Axle
⑩Rod Ass'y Shaft
⑧Idler Gear
⑥Hook
⑦Couple Gear R
④E Ring
⑤Lever Gear Ass'y R
①Idler Gear
③Main Gear
⑬ (Hook for spring coil)
②Spring Coil

Fig. 5-2-3. Cassette Drive Gears (Right Side)

### 5-2-4. Cassette Drive Gear (Left) (See Fig. 5-2-4)

#### 1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the E ring ②.
3) Open the hook ③, then remove the LEVER GEAR ASS'Y L ④. Take care not to open the hook ③ too much, otherwise it may get deformed or broken. If it does, replace it.
4) Remove the SPRING COIL ⑤ from the LEVER GEAR ASS'Y L ④.

#### 2. Remounting

1) Apply grease to the axle ⑨ and shaft ⑩.
2) Align with the COUPLE GEAR L ⑬ and the IDLER GEAR L ⑥ as shown in Fig B.
3) Hook the SPRING COIL ⑤ to the LEVER GEAR ASS'Y L ④.
4) Mount the LEVER GEAR ASS'Y L ④ onto the axle ⑨ and the shaft ⑩. Align with the IDLER GEAR L ⑥ as shown in Fig. B.
5) Mount the COMPL CASSETTE MECHANISM onto the chassis as instructed in 5-2-1.

**Note:** The end of the DOOR OPEN LEVER ⑦ leans against the front side of the CASSETTE DOOR ⑪ as shown in Fig. A.

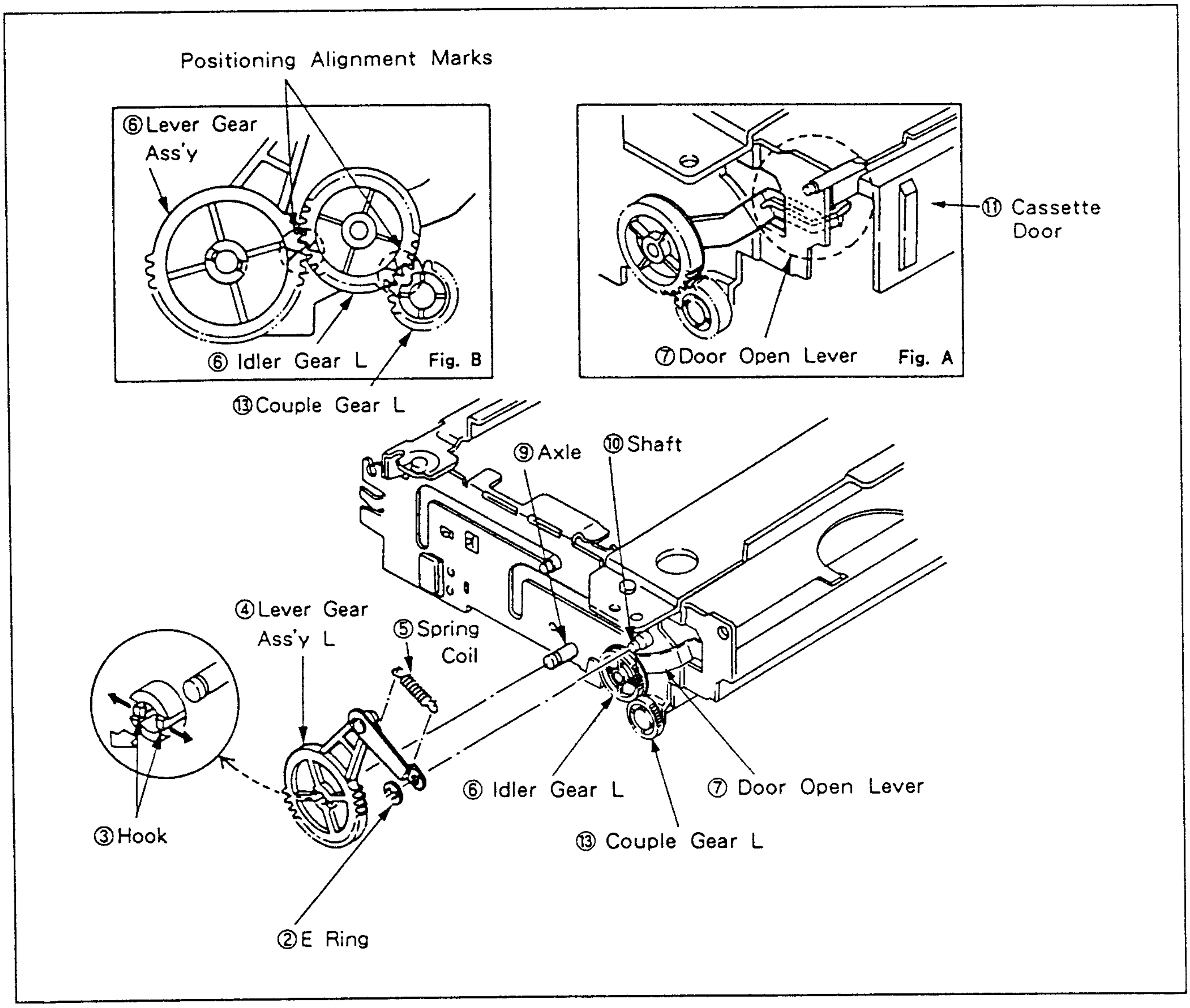

Positioning Alignment Marks
⑥Lever Gear Ass'y
⑥ Idler Gear L
Fig. B
⑬Couple Gear L
⑪ Cassette Door
⑦Door Open Lever
Fig. A
⑨Axle
⑩Shaft
④Lever Gear Ass'y L
⑤Spring Coil
③Hook
⑥ Idler Gear L
⑦ Door Open Lever
⑬ Couple Gear L
②E Ring

Fig. 5-2-4. Cassette Drive Gears (Left Side)

### 5-2-5. FL Start Switch (See Fig. 5-2-5.)

**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the screw ①.
3) Remove the lead wire of the FL START SWITCH ②.

**2. Remounting**

1) Solder the lead wire to the FL START SWITCH ② terminal.
2) Align the FL START SWITCH ② protuberance to the hole ⑤, then mount it onto the GEAR BRACKET ASS'Y ③ with the screw ①. Do it so that the FL START SWITCH ② is turned ON by holding the pin ④ of IDLER GEAR in the EJECT completed mode.
3) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

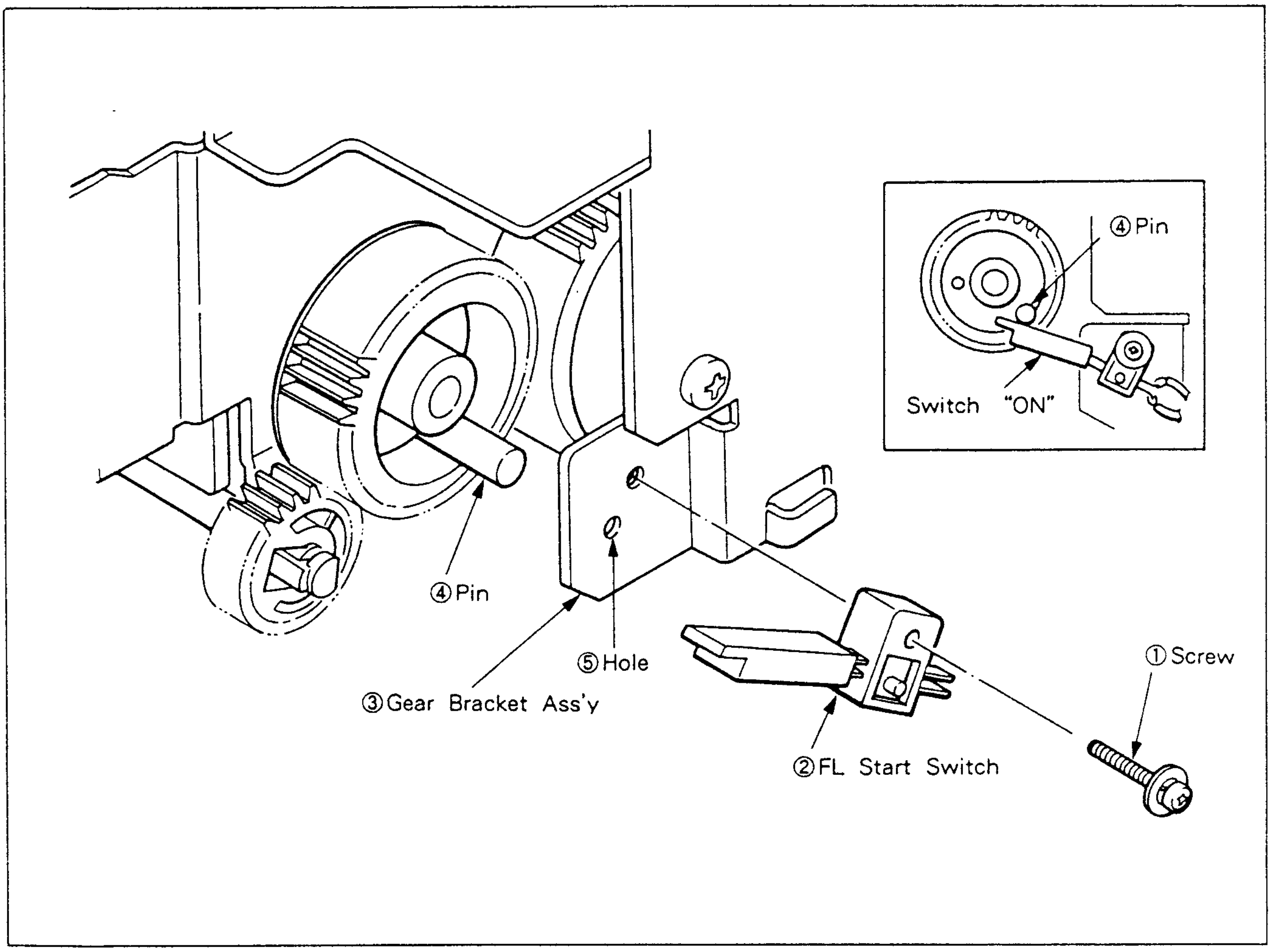

④Pin
Switch "ON"
④Pin
⑤Hole
③Gear Bracket Ass'y
①Screw
②FL Start Switch

Fig. 5-2-5. FL Start Switch

### 5-2-6. T-Top Sensor, T-End Sensor (See Fig. 5-2-6.)

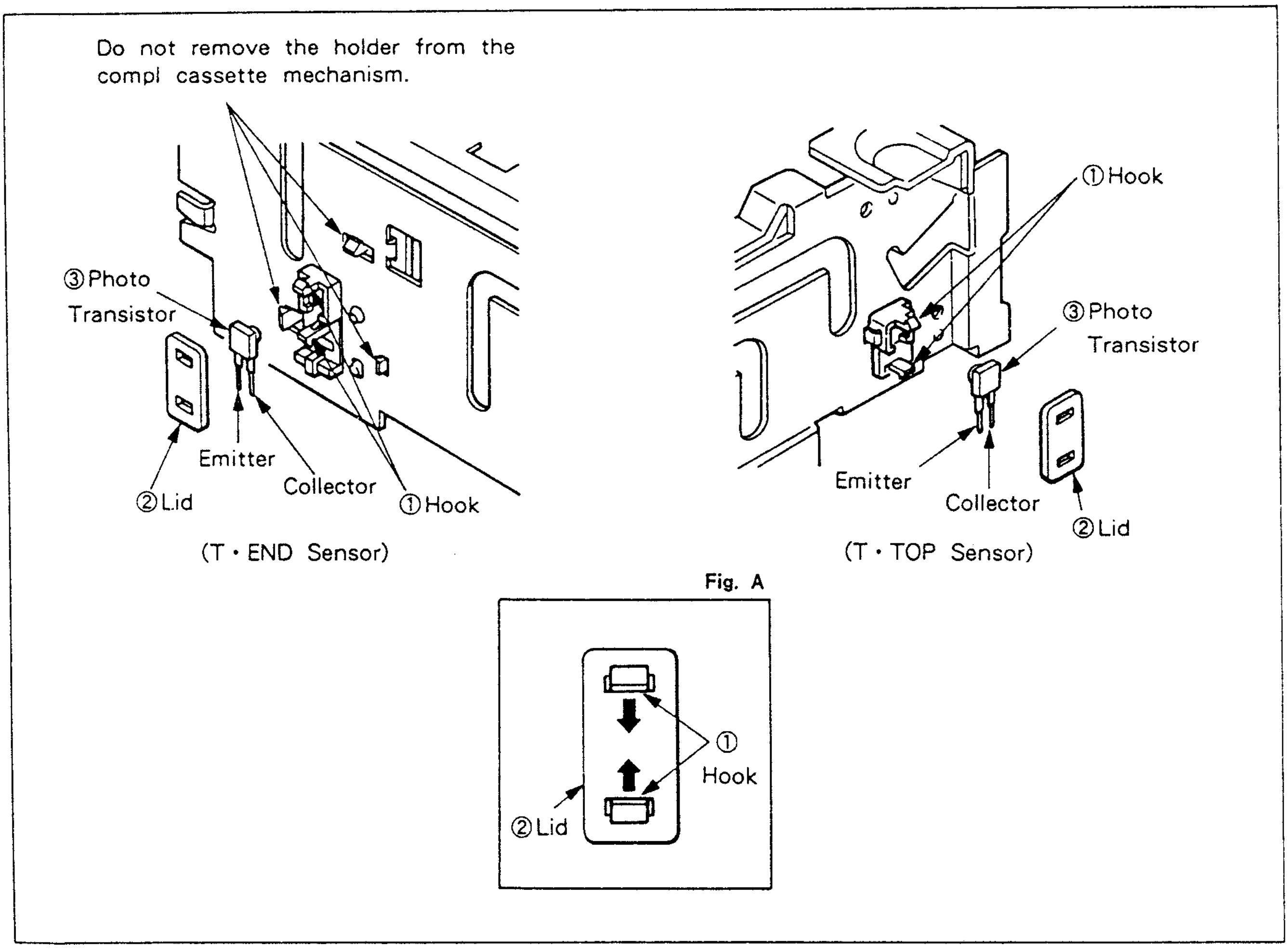
**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) When removing the T-TOP SENSOR, remove the GEAR BRACKET ASS'Y as instructed in 5-2-2.
3) Unhook the hook ① as instructed in Fig. A, then remove the LID ②. Take care not to push the hook ① too much, otherwise it may be deformed or broken.
4) Remove the phototransistors ③, then remove the lead wire.

**Note**: Mounting position of the transistor holder on the T-END SENSOR side is precisely adjusted at the factory, so do never remove it from the COMPL CASSETTE MECHANISM.

**2. Remounting**

1) Solder the brown lead wire to the emitter side, and the red lead wire to the collector side of the T-TOP SENSOR phototransistor ③.
   Solder the orange lead wire to the emitter side, and the yellow lead wire to the collector side of the T-END SENSOR phototransistor.
2) Mount the phototransistors ③ onto their respective holders.
3) Mount the LID ② and fix it with the hook ①.
4) Mount the GEAR BRACKET ASS'Y as instructed in 5-2-2.
5) Mount the COMPL CASSETTE MECHANISM as insturcted in 5-2-1.


Do not remove the holder from the compl cassette mechanism.

(T • END Sensor)

(T • TOP Sensor)

Fig. A

Fig. 5-2-6. T TOP Sensor & T END Sensor

## 5-3. COMPL HOLDER MOTOR (LOADING MOTOR BLOCK)

### 5-3-1. COMPL Motor Bracket

**1. Removal**

1) Remove the PRE-AMP UNIT and the PRE-AMP. BRACKET as instructed in 5-1.
2) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
3) Remove the two screws ① and the other one ⑩, then remove the COMPL HOLDER MOTOR ② (see Fig. 5-3-1.).

**2. Remounting**

1) Set the mechanism chassis to the INITIAL mode. In this mode, look at the mechanism chassis positioning holes ③ just from above and align the MAIN CAM ④ and MODE CAM ⑤ positioning holes as shown in Fig. A.
2) Set the COMPL HOLDER MOTOR ② to the INITIAIL mode with the mode selector (VHJ-0050). In this position, the FRONT LOADING GEAR △ mark ⑥ is aligned with the MOTOR HOLDER INITIAL mode position mark ⑦ (see Fig. B.).
3) Align the ROTARY SWITCH (mode detector switch) ⑧ with the INITIAL mode position mark ⑨ (see Fig. C.).
4) Align the COMPL HOLDER MOTOR main unit ② with the protuberance ⑪, then mount it with the two screws ① and the other one ⑩.
5) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
6) Mount the PRE-AMP UNIT and the PRE-AMP. BRACKET as instructed in 5-1.

**Note :** Normal mechanism operation cannot be achieved if initial positioning of the MAIN CAM ④, the MODE CAM ⑤ and the ROTARY SWITCH (mode detector switch) ⑧ are not performed precisely.

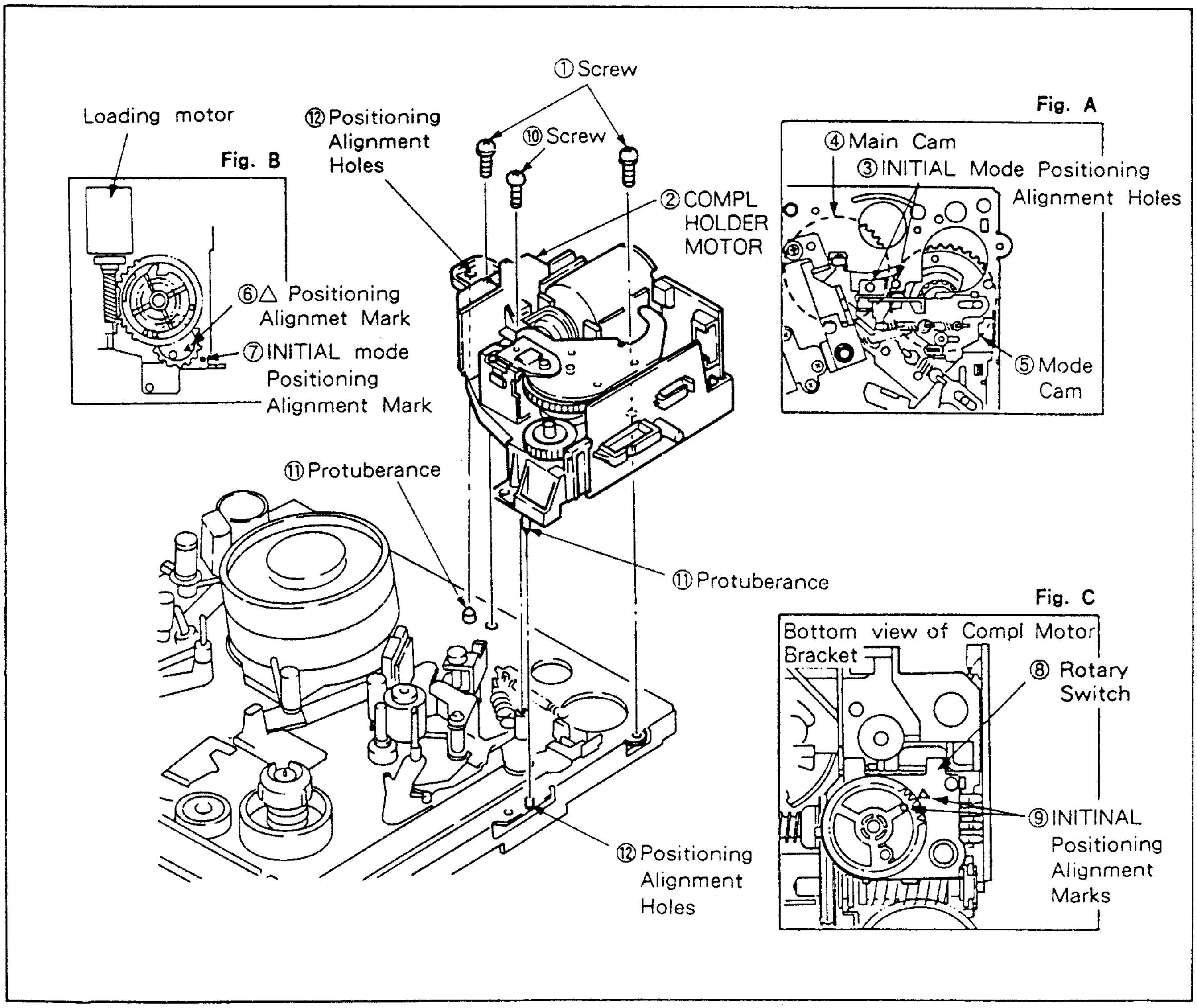

①Screw
Loading motor
⑫Positioning Alignment Holes
⑩Screw
Fig. B
Fig. A
④Main Cam
③INITIAL Mode Positioning Alignment Holes
②COMPL HOLDER MOTOR
⑥△ Positioning Alignmet Mark
⑦INITIAL mode Positioning Alignment Mark
⑤Mode Cam
⑪Protuberance
⑪Protuberance
Fig. C
Bottom view of Compl Motor Bracket
⑧ Rotary Switch
⑨INITINAL Positioning Alignment Marks
⑫Positioning Alignment Holes

Fig. 5-3-1 Compl Holder Motor

### 5-3-2. Loading Motor (Refer to Fig. 5-3-2.)

#### 1. Removal

LOADING MOTOR can be replaced after LOADING MOTOR BLOCK unit has been removed by referring to 5-3-1. The 1990 version of the mechanism allows LOADING MOTOR itself to be replaced without removing CASSETTE HOLDER BLOCK and LOADING MOTOR BLOCK. The following describes this procedure.

1) Use MODE SELECTOR (VHJ-0050) to set the mechanism to the initial mode.
2) Remove the connector for DEW SENSOR connected to the MC-3 board ①.
3) Remove three screws ② and remove HOLDER BRACKET ④ with FRONT WORM ASS'Y ③ still attached.
4) Remove DAMPER ⑥ attached to the pulley of LOADING MOTOR ⑤.
5) Remove FRONT HELICAL GEAR ⑦ and WASHER ⑧.
6) Remove soldered LEAD WIRE from the terminal of LOADING MOTOR ⑤.
7) Remove LOADING BELT ⑨.
8) Remove LOADING MOTOR ⑤ by lifting up from the back terminal side.

#### 2. Remounting

Before attaching LOADING MOTOR ⑤ to MOTOR BRACKET ASS'Y ⑩, confirm DAMPER ⑪ and DAMPER ⑫ shown in Fig. 5-3-5. are in the proper position on MOTOR BRACKET ASS'Y ⑩.

1) LOADING MOTOR ⑤ puts REAR SIDE BOSS ㉓ in the slit ㉔ of MOTOR HOLDER ⑩.
   Further, mount the tap hole ⑬ at two points of the front pulley side so that the it is secured to the PROTUBERANCE ⑭ of the MOTOR HOLDER at two points.
2) Solder the lead wire from the MC-3 board to LOADING MOTOR ⑤ terminal. (Solder the red lead wire to the positive terminal side.)
3) Hang LOADING BELT ⑨ on the pulley.
4) After hanging BELT ⑨ on the pulley, confirm that the mechanism unit is in the initial mode. The initial mode is indicated by Fig. A of Fig. 5-3-2., and is the position in which INITIAL POSITIONING ALIGNMENT HOLEs of MAIN CAM ⑮ and MODE CAM ⑯ are lined up with THROUGH HOLE ⑰ of MOTOR HOLDER. If the initial mode is not selected, adjust with MODE SELECTOR (VHJ-0050).
5) As shown in Fig. B, confirm the positions of the △ POSITIONING ALIGNMENT MARK on FRONT LOAD GEAR ⑱ and INITIAL MARK ⑲ position of MOTOR HOLDER and the position relationship of CASSETTE HOLDER RACK ⑳.
6) Apply a light coat of grease to the entire sides of AXLE ㉑ and FRONT HELICAL GEAR ⑦.
7) Attach FRONT HELICAL GEAR ⑦ and WASHER ⑧ to AXLE ㉑. As shown in Fig. C, FRONT HELICAL GEAR ⑦ is attached so that the indent on the side is inside PIN ㉒ of FRONT LEVER ASS'Y.
8) Attach DAMPER ⑥ to LOADING MOTOR ⑤ pulley.
9) HOLDER BRACKET ④ is attached by engaging FRONT WORM ASS'Y ③ with LOADING MOTOR ⑤ pulley, and held in place with three screws ②.
10) Attach the connector of DEW SENSOR ㉕ to the MC-3 board ① and return the mechanism to the eject completion using MODE SELECTOR.

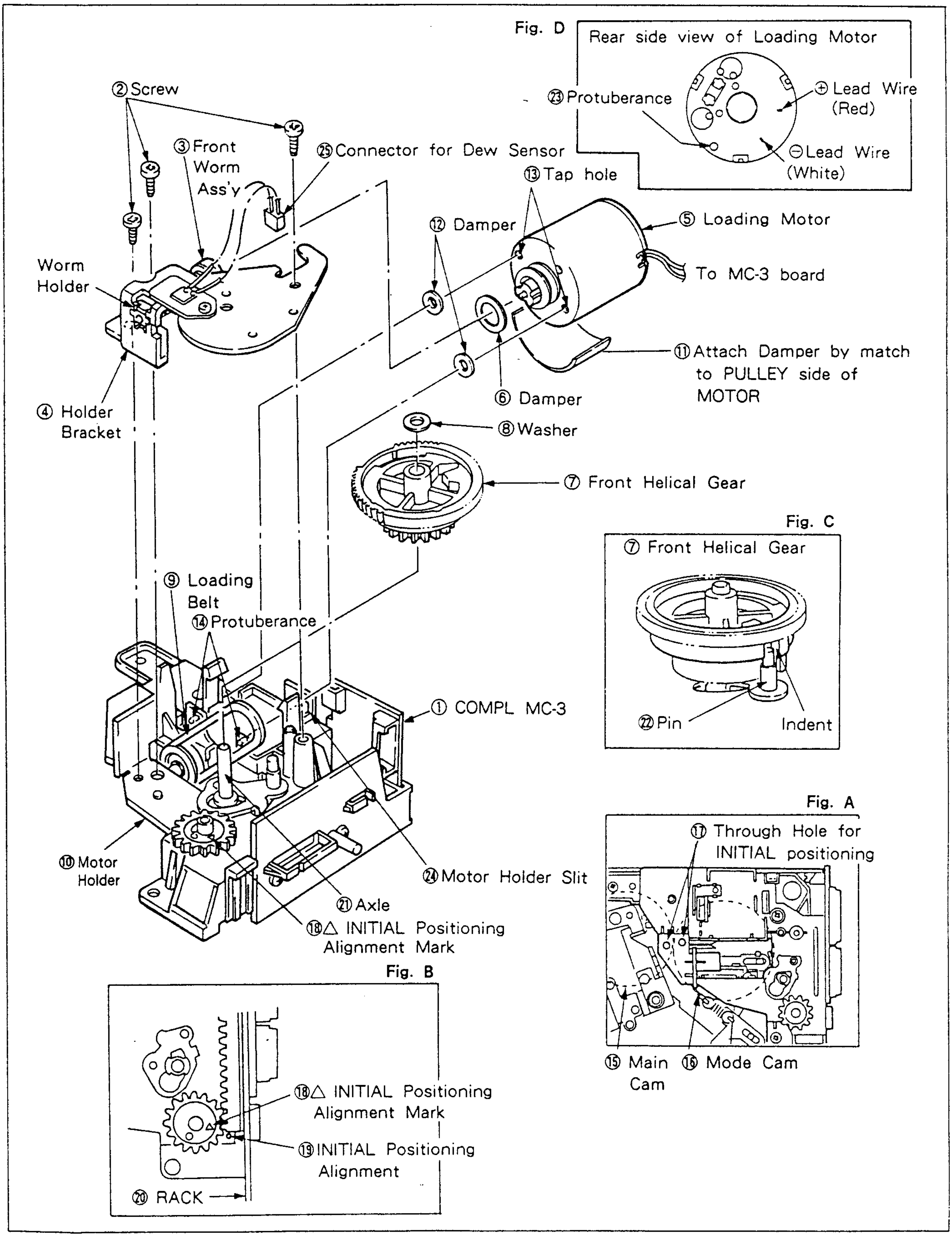


Fig. D
Rear side view of Loading Motor
㉓Protuberance
⊕ Lead Wire (Red)
⊖Lead Wire (White)
②Screw
③Front Worm Ass'y
㉕Connector for Dew Sensor
⑬Tap hole
⑫ Damper
⑤ Loading Motor
To MC-3 board
Worm Holder
⑪Attach Damper by match to PULLEY side of MOTOR
④ Holder Bracket
⑥ Damper
⑧Washer
⑦ Front Helical Gear
Fig. C
⑦ Front Helical Gear
㉒Pin
Indent
⑨ Loading Belt
⑭Protuberance
① COMPL MC-3
Fig. A
⑰ Through Hole for INITIAL positioning
⑩Motor Holder
㉔Motor Holder Slit
㉑Axle
⑱△ INITIAL Positioning Alignment Mark
⑮ Main Cam
⑯ Mode Cam
Fig. B
⑱△ INITIAL Positioning Alignment Mark
⑲INITIAL Positioning Alignment
⑳ RACK

Fig. 5-3-2. Loading Motor

## 5-4. TAPE LOADING MECHANISM

### 5-4-1. Main Parts of the Tape Loading Mechanism (See Fig. 5-4-1.)

#### 1. Removal

1) Remove connectors from the DRUM MOTOR board (SV-5).
2) Remove the three screws ①, then remove the REINFORCE BRACKET ②.
3) Remove the three special washers ③ and ⑦, then remove the spacer ⑥, LOAD RACK ④ and MAIN CAM ⑧.
4) Unhook the LOAD GEAR T hook ⑩, then remove the LOAD GEAR T ⑨ as shown in Fig. A, with the SPRING COIL ⑪ and the LOAD LEVER ASS'Y T ⑫ attached to it.
5) Unhook the LOAD GEAR S hook ⑭, then remove the LOAD GEAR S ⑬ as shown in Fig. B, with the SPRING COIL ⑮ and the LOAD LEVER ASS'Y S ⑯ attached to it.

**Note:** Take care not to open the LOAD GEAR hooks too much, otherwise they may be deformed or broken. If they are, replace them.

#### 2. Remounting

1) Apply grease to the hole ⑰ of the LOAD LEVER ASS'Y S ⑯, as shown in Fig. B.
2) Apply grease to the hole ㉒ of the LOAD LEVER ASS'Y T ⑫ as shown in Fig. A, and to the sections of the LOAD GEAR T ⑨ as indicated with an arrow in Fig. C.
3) Apply grease to GROOVE 1, GROOVE 2 and to the outer side of the MAIN CAM ⑧, shown in Fig. E.
4) Apply grease to the three oval holes of the LOAD RACK ④ as shown in Fig. D.
5) Apply grease to the outer surface of axles ⑲, ⑳ and ㉘.
6) After assembling as shown in Fig. B, mount the LOAD GEAR S ⑬ onto the axle ⑲. Insert the ROLLER BASE S pin ⑱ into the hole ⑰ of the LOAD LEVER ASS'Y S.
7) After assembling as shown in Fig. A, mount the LOAD GEAR T ⑨ onto the axle ⑳. When doing so, align the INITIAL mode positioning alignment holes ㉑ of the LOAD GEAR S ⑬ and the LOAD GEAR T ⑨ to the INITIAL mode position. Insert the ROLLER BASE T pin ㉓ into the hole ㉒ of the LOAD LEVER ASS'Y T ⑫.
8) Mount the MAIN CAM ⑧ onto the axle ㉖. At that time, make sure that the INITIAL mode positioning alignment holes ㉕ of the MAIN CAM ⑧ and the MODE CAM ㉔ match the INITIAL mode positioning alignment holes ㉞ of the MECHANISM CHASSIS. Also check to be sure that the pin ㉗ of the CAM PINCH LEVER ASS'Y is put in the GROOVE 1 of the MAIN CAM as shown in Fig. E.
9) Mount the LOAD RACK ④ onto the axles ㉖ and ㉛. At that time, set the INITIAL mode positioning alignment marks ㉚ of the LOAD RACK ④ and the LOAD GEAR T ⑨ to the INITIAL mode position. Insert the LOAD RACK pin ㉙ into the MAIN CAM GROOVE 2 as shown in Fig. E.
10) Mount the spacer ⑥ and the special washer ⑦ onto the axle ㉖.
11) Mount the two special washers ③ onto the two axles ㉛.
12) Mount the REINFORCE BRACKET ② with the three screws ①.
13) Insert the connector into the DRUM MOTOR board (SV-5).
14) Confirm that loading and unloading are performed smoothly.

**Note:** Be sure to perform INITIAL mode positioning of cams and gears precisely.

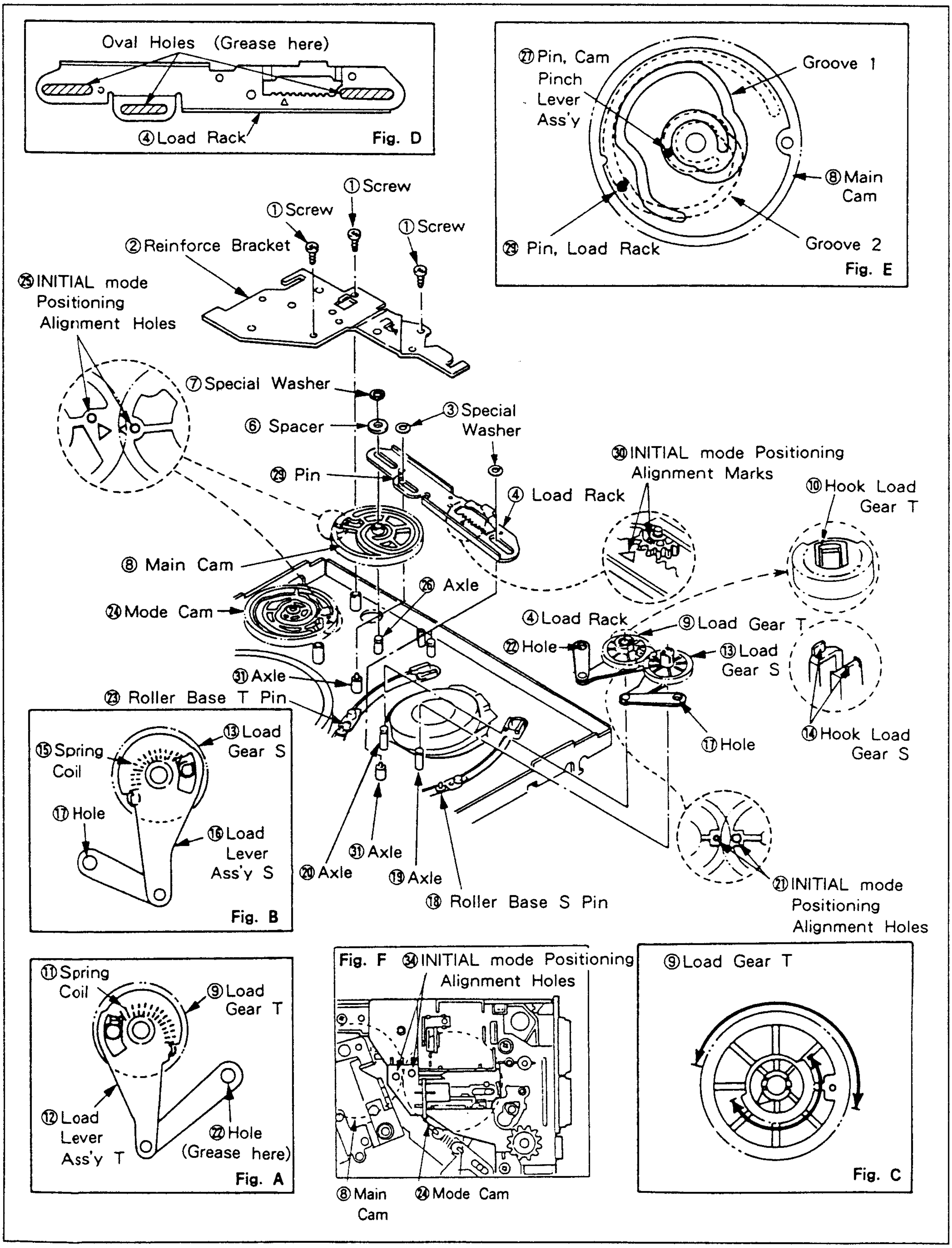

Oval Holes (Grease here)
④Load Rack
Fig. D
㉗Pin, Cam Pinch Lever Ass'y
Groove 1
⑧Main Cam
㉘ Pin, Load Rack
Groove 2
Fig. E
①Screw
①Screw
①Screw
②Reinforce Bracket
㉕INITIAL mode Positioning Alignment Holes
⑦Special Washer
⑥ Spacer
③Special Washer
㉙ Pin
㉚INITIAL mode Positioning Alignment Marks
④ Load Rack
⑩Hook Load Gear T
⑧ Main Cam
㉖ Axle
㉔Mode Cam
④Load Rack
⑨Load Gear T
㉒Hole
⑬Load Gear S
㉛Axle
㉓ Roller Base T Pin
⑰Hole
⑭Hook Load Gear S
⑮Spring Coil
⑬Load Gear S
⑰Hole
⑯Load Lever Ass'y S
Fig. B
㉛Axle
⑳Axle
⑲Axle
⑱ Roller Base S Pin
㉑INITIAL mode Positioning Alignment Holes
⑪Spring Coil
⑨Load Gear T
⑫Load Lever Ass'y T
㉒Hole (Grease here)
Fig. A
Fig. F
㉞INITIAL mode Positioning Alignment Holes
⑧Main Cam
㉔Mode Cam
⑨Load Gear T
Fig. C

Fig. 5-4-1. Loading Mechanism Main Parts

### 5-4-2. Mode Cam (See Fig. 5-4-2.)

**1. Removal**

1) Set the INITIAL mode with the mode selector (VHJ-0050).
2) Remove the REINFORCE BRACKET as instructed in 5-4-1.
3) Remove the two stop washers ①, then remove the CAM PLATE SLIDE ASS'Y ②.
4) Remove the MODE CAM ③.

**2. Remounting**

1) Referring to 5-4-1., confirm that the MAIN CAM is in the INITIAL mode position.
2) In case the MAIN CAM is misplaced, use the mode selector (VHJ-0050) to align the MAIN CAM positioning hole with the chassis INITIAL mode position hole (refer to 5-4-1. for the INITIAL mode position). Since the ROTARY SWITCH (mode detector switch) does not rotate, the mode selector indicator lamp will not show the correct mode.
3) Align the ROTARY SWITCH (mode detector switch) ④ with the INITIAL mode position mark ⑤ as shown in Fig. A.
4) Mount the MODE CAM ③ onto the axle ⑥. Do it so that the SLIDE CAM ASS'Y pin ⑪ is placed in the GROOVE 3 as shown in Fig. B.
5) Mount the CAM PLATE SLIDE ASS'Y ② onto the axles ⑥ and ⑦. Do it so that the pin ⑧ gets into the GROOVE 4 of the MODE CAM as shown in Fig. B, and the point ⑨ of the bent-up part into the ACT PLATE SLIDE ASS'Y hole ⑩.
6) Mount the two special washers ① onto the axles ⑥ and ⑦.
7) Mount the REINFORCE BRACKET as instructed in 5-4-1.

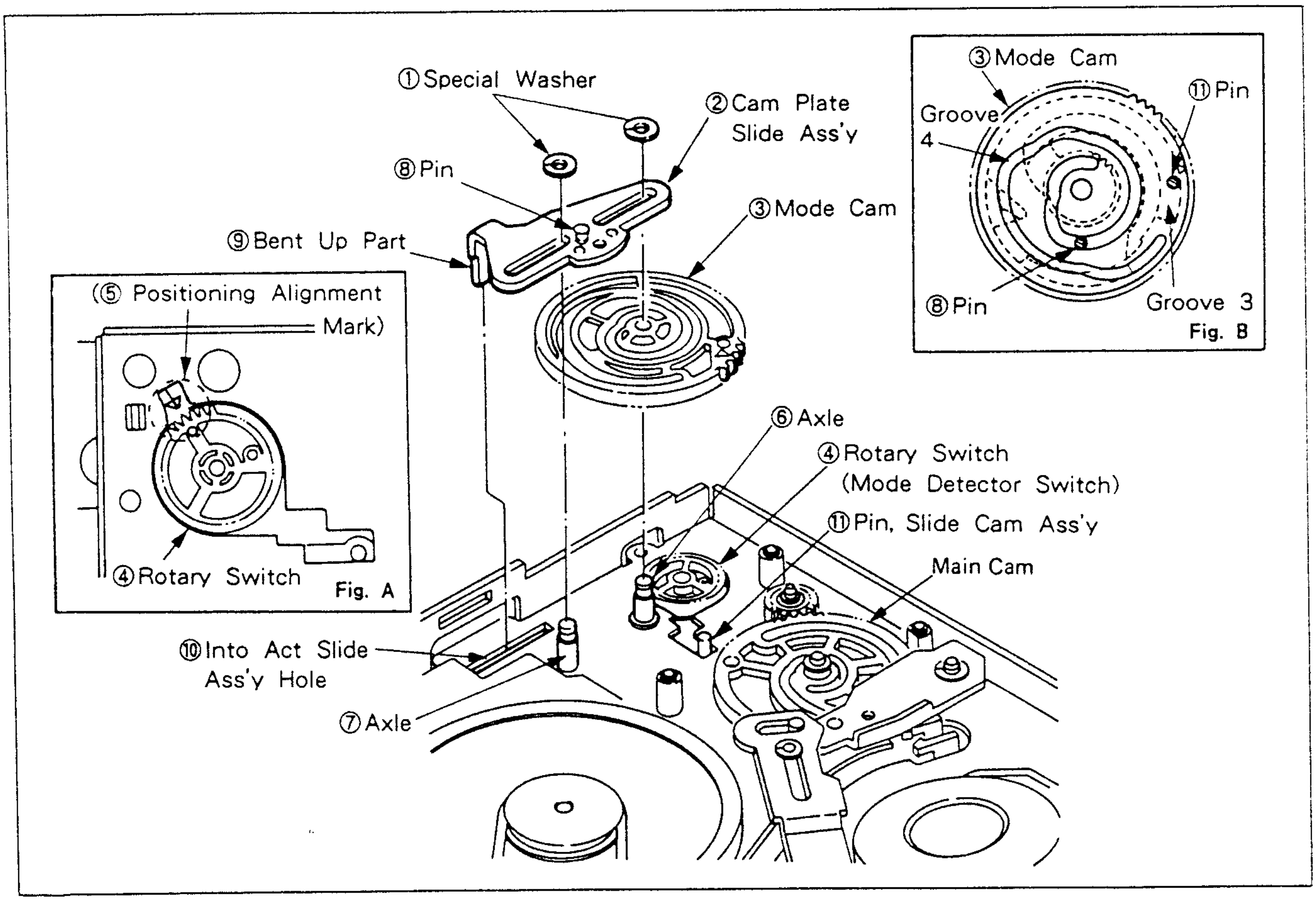

①Special Washer
②Cam Plate Slide Ass'y
⑧Pin
③Mode Cam
⑨Bent Up Part
(⑤ Positioning Alignment Mark)
④Rotary Switch
Fig. A
⑩Into Act Slide Ass'y Hole
⑦Axle
⑥Axle
④Rotary Switch (Mode Detector Switch)
⑪Pin, Slide Cam Ass'y
Main Cam
③Mode Cam
⑪Pin
Groove 4
⑧Pin
Groove 3
Fig. B

Fig. 5-4-2. Mode Cam

## 5-5. COMPL HEAD BRACKET (ACE HEAD) (See Fig. 5-5-1.)

1. **Removal**

1) Remove the COMPL HEAD BRACKET special mounting nut ②.
2) Remove the SLEEVE ③, the COMPL HEAD BRACKET ① and the ACE HEAD SPRING COIL ④, in that order.

**Note** : Take care not to scratch or soil the ACE head surface.

2. **Remounting**

1) Apply grease to the axle ⑥ as shown in Fig. A.
2) Apply grease to the spot where the COMPL HEAD BRACKET ① makes contact with the STOPPER ⑦ (See Fig. A).
3) Mount the ACE HEAD SPRING COIL ④ and the COMPL HEAD BRACKET ①, in that order, onto the axle ⑥. Hook one end of the ACE HEAD SPRING COIL ④ to the notch ⑤, and the other end to the COMPL HEAD BRACKET, so that the COMPL HEAD BRACKET is pressed against the STOPPER ⑦ (See Fig. A).
4) Mount the SPECIAL NUT ② onto the axle ⑥ through the SLEEVE ③.
5) Clean the ACE head surface with a chamois leather moistened with methyl alcohol.
6) Perform ACE head adjustment as instructed in 6-4.

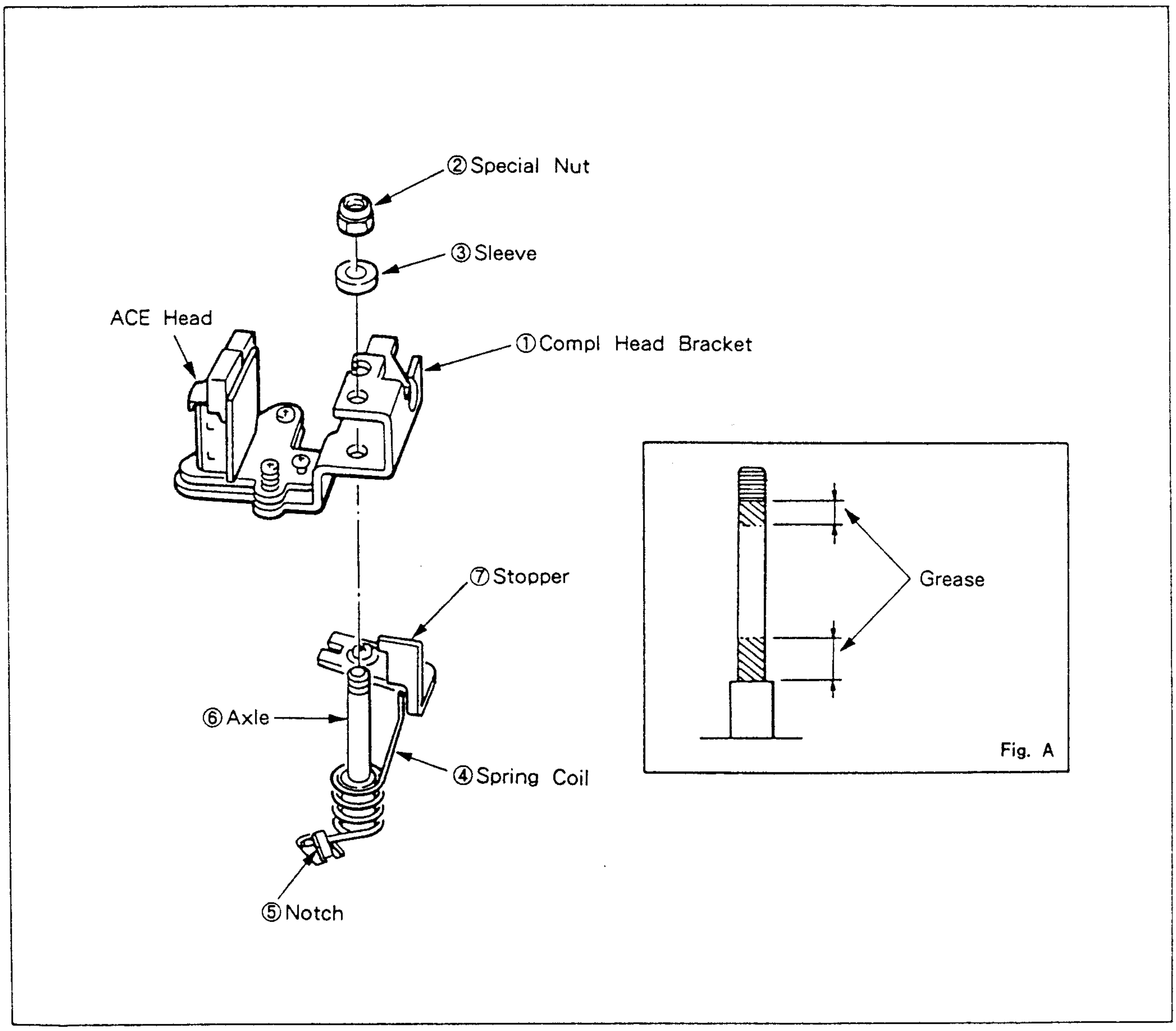

②Special Nut
③Sleeve
ACE Head
①Compl Head Bracket
⑦Stopper
⑥Axle
④Spring Coil
⑤Notch
Grease
Fig. A

Fig. 5-5-1. Compl Head Bracket (ACE Head)

## 5-6. PINCH ROLLER PRESSURE MECHANISM (See Fig. 5-6-1.)

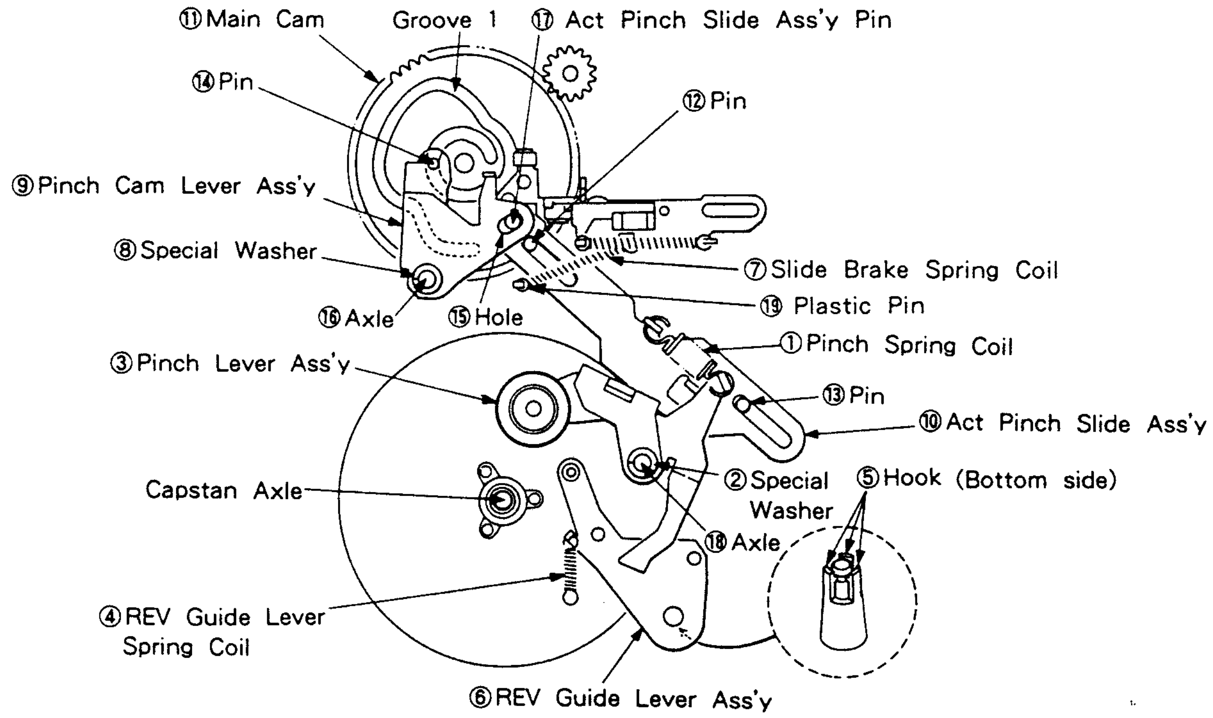
### 1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the COMPL HEAD BRACKET as instructed in 5-5.
3) Remove the PINCH SPRING COIL ①.
4) Remove the special washer ②, then remove the PINCH LEVER ASS'Y ③.
5) Remove the REV GUIDE LEVER SPRING COIL ④.
6) Remove REV GUIDE LEVER ASS'Y ⑥ from the hook ⑤ of the plastic bearing on the bottom side. Use a jig VHJ-0073 shown in Fig. 5-6-2 to widen the hook of the plastic bearing. By so doing, the above removal of the REV GUIDE LEVER ASS'Y ⑥ can be made more easily. Care should be taken to avoid pushing the jig VHJ-0073 too much. Pushing it too hard may damage the hook in an extreme case.
7) Remove the SLIDE BRAKE SPRING COIL ⑦.
8) Remove the special washer ⑧, then remove the PINCH CAM LEVER ASS'Y ⑨.
9) Remove the ACT PINCH SLIDE ASS'Y ⑩.

**Note:** If the hook ⑤ of the plastic bearing is damaged, reference should be made to Section 3. "Method of Repairing the Bearing Section of REV GUIDE LEVER ASS'Y".

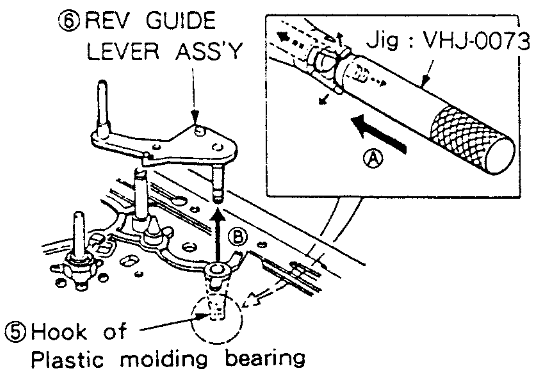
### 2. Remounting

1) Apply grease to pins ⑫/⑬ and axles ⑯/⑱.
2) Apply grease to the ACT PINCH SLIDE ASS'Y pin ⑰.
3) Set the INITIAL mode with the mode selector (VHJ-0050).
4) Mount the ACT PINCH SLIDE ASS'Y ⑩ onto pins ⑫ and ⑬.
5) Insert the pin ⑭ of the PINCH CAM LEVER ASS'Y ⑨ into the MAIN CAM ⑪ GROOVE 1, and mount onto the axle ⑯ while inserting the ACT PINCH SLIDE ASS'Y pin ⑰ of the ACT PINCH SLIDE ASS'Y into the hole ⑮.
6) Mount the special washer ⑧ onto the axle ⑯.
7) Hook the SLIDE BRAKE SPRING COIL ⑦ to the plastic pin ⑲.
8) Mount the REV GUIDE LEVER ASS'Y ⑥ to the plastic molding bearing, then fix it with the hook ⑤ at the bottom.
9) Hook the REV GUIDE LEVER SPRING COIL ④.
10) Mount the PINCH LEVER ASS'Y ③ to the axle ⑱.
11) Mount the special washer ② to the axle ⑱.
12) Hook the PINCH SPRING COIL ① between the ACT PINCH SLIDE ASS'Y ⑩ and the PINCH LEVER ASS'Y ③.
13) Mount the COMPL HEAD BRACKET as instructed in 5-5.
14) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
15) Perform ACE head adjustment as instructed in 6-4.



⑪Main Cam
Groove 1
⑰ Act Pinch Slide Ass'y Pin
⑭Pin
⑫Pin
⑨Pinch Cam Lever Ass'y
⑧Special Washer
⑦Slide Brake Spring Coil
⑲ Plastic Pin
⑯Axle
⑮Hole
①Pinch Spring Coil
③Pinch Lever Ass'y
⑬Pin
⑩Act Pinch Slide Ass'y
Capstan Axle
②Special Washer
⑤Hook (Bottom side)
⑱Axle
④REV Guide Lever Spring Coil
⑥REV Guide Lever Ass'y

Fig. 5-6-1. Pinch Roller Pressure Mechanism


⑥REV GUIDE LEVER ASS'Y
Jig : VHJ-0073
Ⓐ
Ⓑ
⑤Hook of Plastic molding bearing

Remove REV GUIDE LEVER ASS'Y in the direction of arrow Ⓑ, pushing VHJ-0073 slightly in the direction of arrow Ⓐ.
Be careful not to damage the hook by pushing too much.

Fig. 5-6-2 Method of Using the Jig VHJ-0073

### 3. Method of Repairing the Bearing Section of REV GUIDE LEVER ASSEMBLY

If the hook of the plastic molding bearing is damaged in the process of removing the REV GUIDE LEVER ASS'Y, proceed with the repair as follows :

1) Scrape the broken hook of the bearing section with a cutter knife and flatten it.
2) Insert the REV GUIDE LEVER ASS'Y in the bearing and fit a stopper washer in. The special washer to be used must be Part No. 411 109 1605. This stop washer (Part No. 411 109 1605) is the same as that used on SUPPLY REEL ASS'Y or TAKE-UP REEL ASS'Y.
   Remove the REV GUIDE LEVER ASSEMBLY toward an arrow B while pushing the jig VHJ-0073 lightly in the direction of an arrow.

Pushing the jig VHJ-0073 too much may cause hook breakage. Therefore, care should be taken.

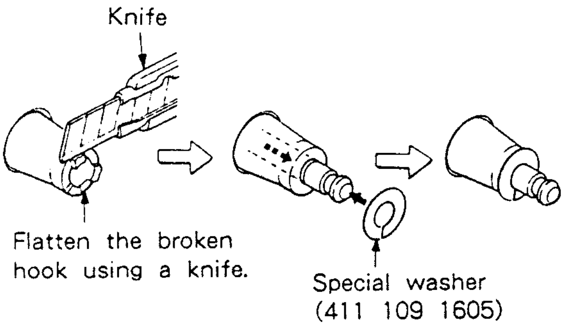

Knife
Flatten the broken hook using a knife.
Special washer (411 109 1605)

Fig. 5-6-3 Method of Repairing the Bearinlg Section of the REV GUIDE LEVER ASSEMBLYE

## 5-7. BRAKE MECHANISM

### 5-7-1. Sub Take-up Brake Ass'y (See Fig. 5-7-1.)

**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the SPRING COIL ①.
3) While pushing the hook ② in the direction of arrow, remove the SUB TAKE-UP BRAKE ASS'Y ③.

**2. Remounting**

1) Mount the SUB TAKE-UP BRAKE ASS'Y ③ onto the pin ④. Confirm that the hook ② is firmly hooked to the chassis.
2) Fit the SPRING COIL between hooks ⑤ and ⑥.
3) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

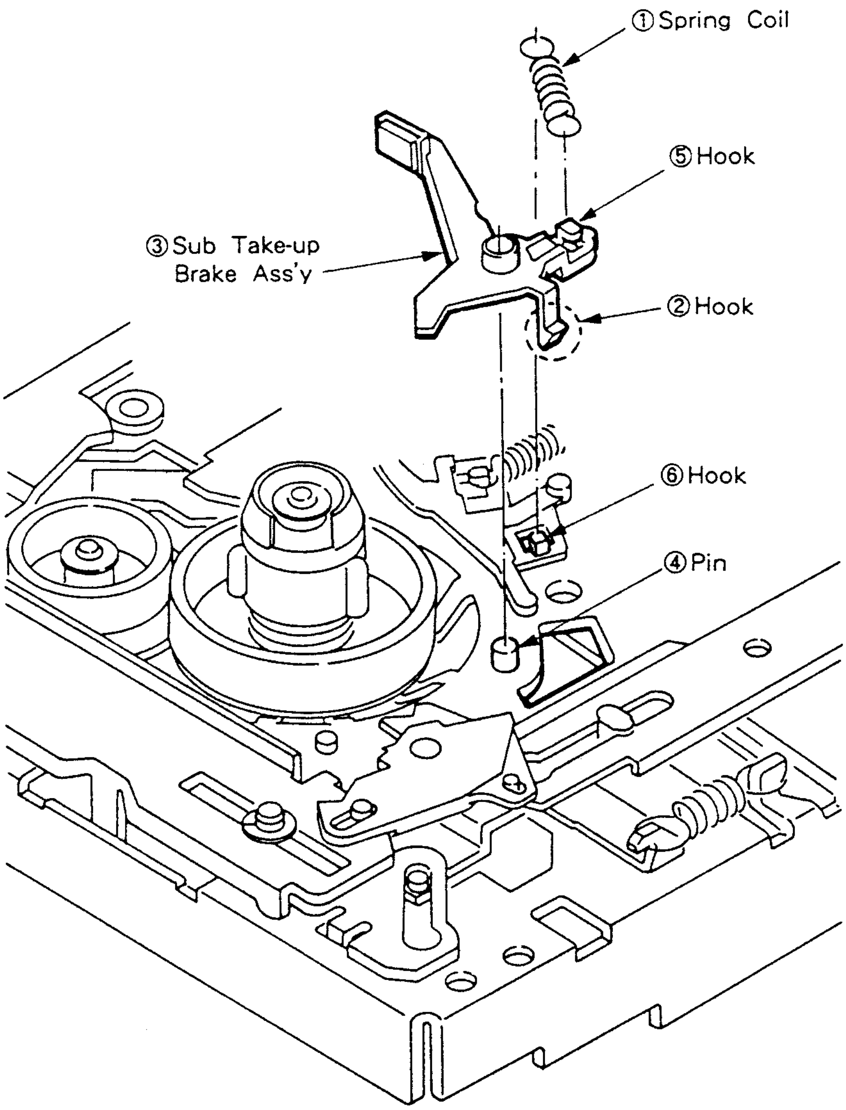

①Spring Coil
⑤Hook
③Sub Take-up Brake Ass'y
②Hook
⑥Hook
④Pin

Fig. 5-7-1. Sub Take-up Brake Ass'y

### 5-7-2. Supply Brake Ass'y and Take-up Brake Ass'y (See Fig. 5-7-2.)

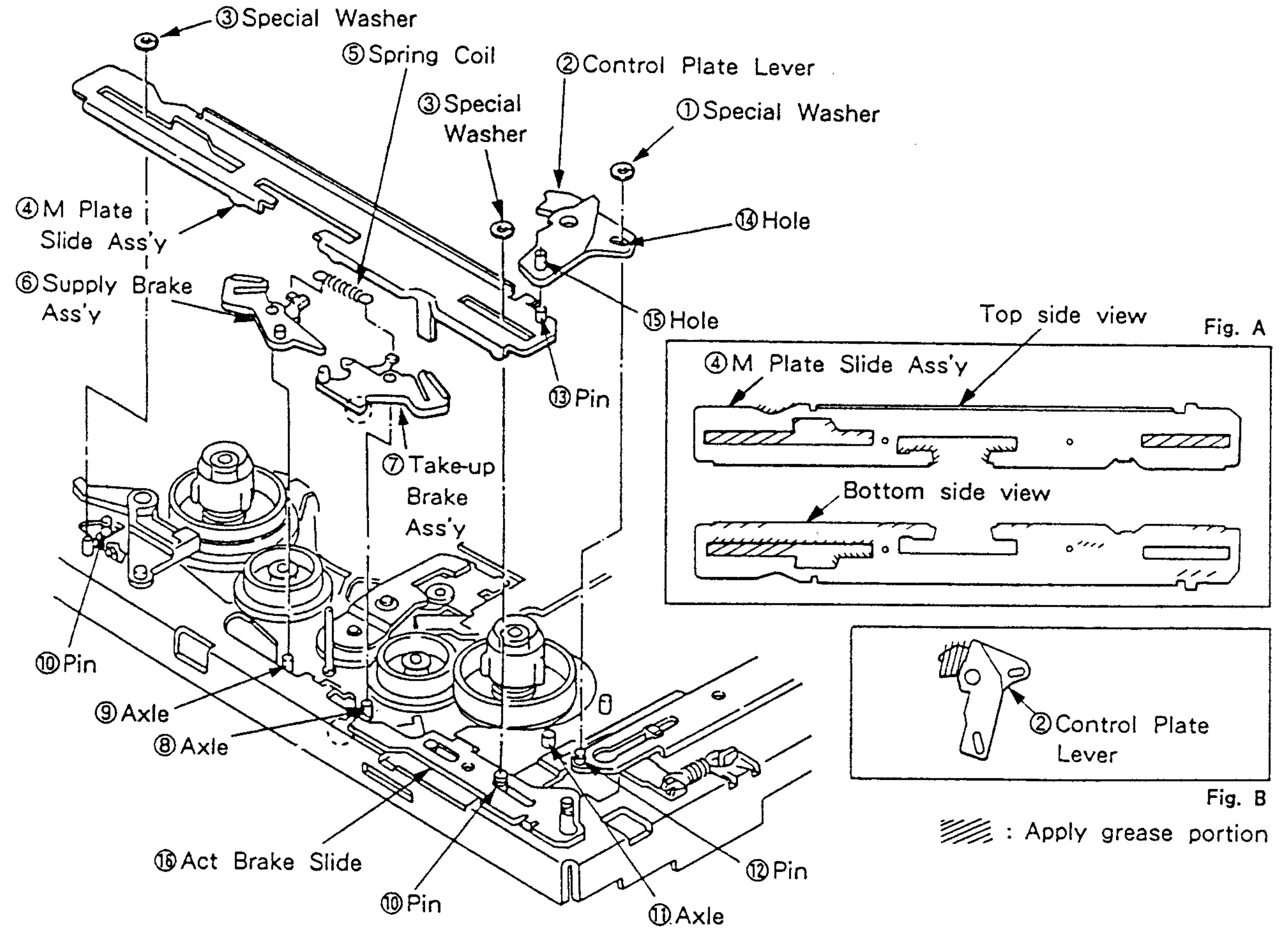
1. **Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the SUB TAKE-UP BRAKE as instructed in 5-7-1.
3) Remove the special washer ①, then remove the CONTROL PLATE LEVER ②.
4) Remove the two special washers ③, then remove the M PLATE SLIDE ASS'Y ④.
5) Remove the SPRING COIL ⑤.
6) Remove the SUPPLY BRAKE ASS'Y ⑥ and the TAKE-UP BRAKE ASS'Y ⑦.

**Note :** Take care not to soil the brake shoes.

2. **Remounting**

1) Apply a thin layer of grease to axles ⑧ and ⑨.
2) Mount the TAKE-UP BRAKE ASS'Y ⑦ onto the axle ⑧.
3) Mount the SUPPLY BRAKE ASS'Y ⑥ onto the axle ⑨.
4) After applying a thin layer of grease to the M PLATE SLIDE ASS'Y ④ as shown in Fig. A, mount it onto the two pins ⑩.
5) Mount the two special washers ③ onto the two pins ⑩.
6) After applying grease to the CONTROL PLATE LEVER ② as shown in Fig. B, mount it onto the axle ⑪. Insert the ACT PLATE SLIDE ASS'Y pin ⑫ into the hole ⑭, and the M PLATE SLIDE ASS'Y pin ⑬ into the hole ⑮.
7) Mount the special washer ① onto the pin ⑫.
8) Mount the SUB TAKE-UP BRAKE as instructed in 5-7-1.
9) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.


③Special Washer
⑤Spring Coil
②Control Plate Lever
③Special Washer
①Special Washer
⑭Hole
④M Plate Slide Ass'y
⑥Supply Brake Ass'y
⑮Hole
⑬Pin
⑦Take-up Brake Ass'y
⑩Pin
⑨Axle
⑧Axle
⑯Act Brake Slide
⑩Pin
⑫Pin
⑪Axle
Top side view
Fig. A
④M Plate Slide Ass'y
Bottom side view
②Control Plate Lever
Fig. B
▨ : Apply grease portion

When assembling, the contact surfaces of Take-up Brake ⑦ and the Brake Slide ⑯ marked with ⁘ should contact but not overlap each other.

Fig. 5-7-2. Supply Brake Ass'y & Take-up Brake Ass'y

### 5-7-3. Tension Lever Ass'y and Band Holder Ass'y (See Fig. 5-7-3.)

**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the SPRING COIL ①.
3) Remove the screw ③ fixing the BAND HOLDER ASS'Y ②.
4) Push the SUB SUPPLY BRAKE ④ in the direction of the arrow A, setting the BAND HOLDER ASS'Y ② free.
5) Open the hook ⑤ a little and remove the TENSION LEVER ASS'Y ⑥. Take care not to open the hook ⑤ too much, otherwise it may be deformed or broken.
6) Remove the hook ⑦ of the BAND HOLDER ASS'Y.

**2. Remounting**

1) Mount the BAND HOLDER ASS'Y hook ⑦ into the TENSION LEVER ASS'Y hole ⑧.
2) Insert the TENSION LEVER ASS'Y axle ⑨ into the hole ⑩ and confirm that the hook ⑤ is hooked.
3) While pushing the SUB SUPPLY BRAKE ④ in the direction of arrow A, mount the BAND HOLDER ASS'Y ② with the screw ③.
4) Hook the SPRING COIL ① between the hooks ⑪ and ⑫.
5) Perform TENSION POLE position adjustment as instructed in 6-3.
6) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

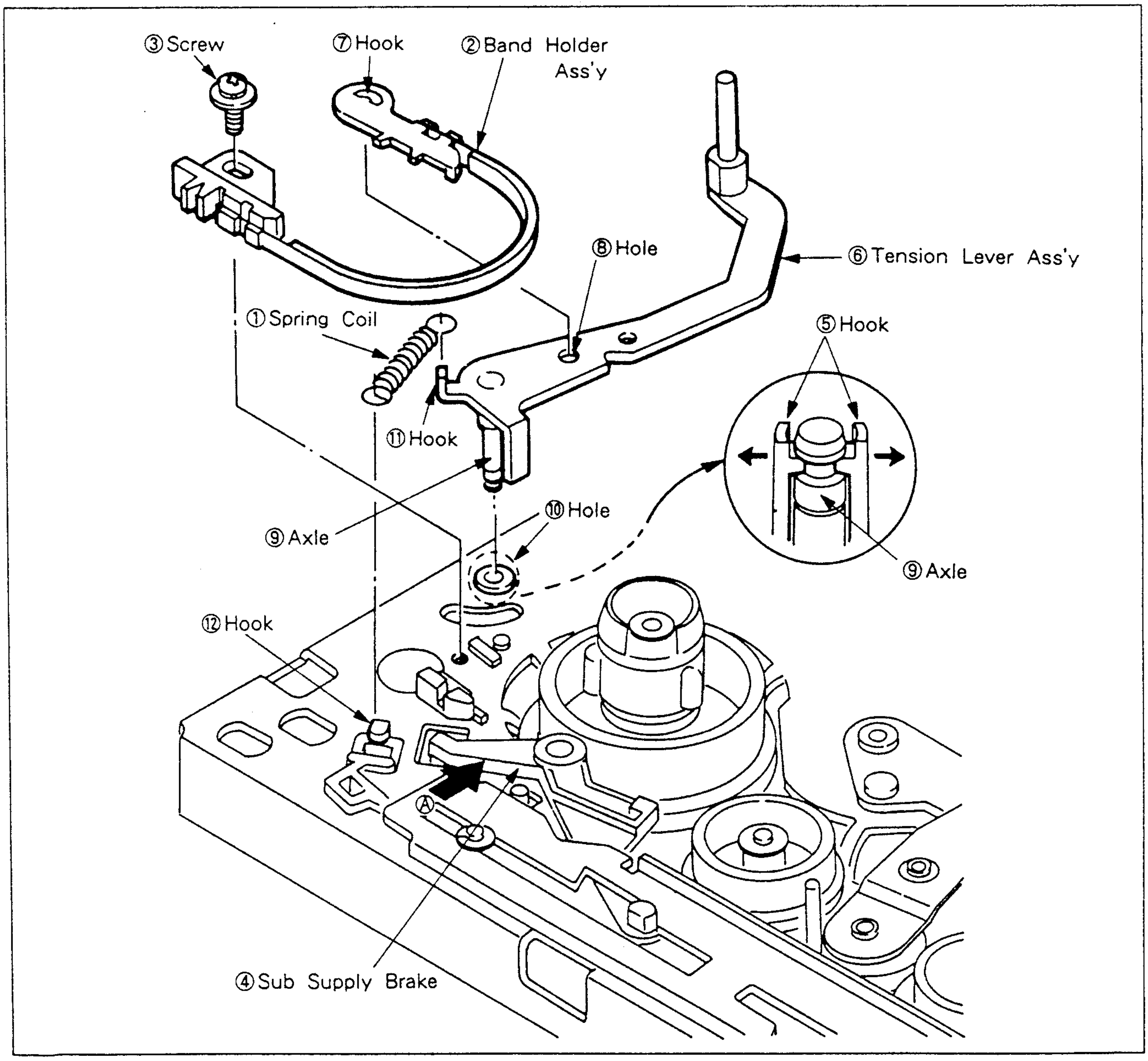

③Screw
⑦Hook
②Band Holder Ass'y
⑧Hole
⑥Tension Lever Ass'y
⑤Hook
①Spring Coil
⑪Hook
⑨Axle
⑩Hole
⑨Axle
⑫Hook
Ⓐ
④Sub Supply Brake

Fig. 5-7-3. Tension Lever Ass'y & Band Holder Ass'y

### 5-7-4. Capstan Brake Ass'y (See Fig. 5-7-4.)

1. **Removal**

1) Remove the SPRING COIL ①.
2) Unhook the hook ②, then remove the CAPSTAN BRAKE ASS'Y ③.

2. **Remounting**

1) Mount the CAPSTAN BRAKE ASS'Y ③ onto the axle ④. Confirm that the hook ② is hooked to the chassis.
2) Hook the SPRING COIL ① between hooks ⑤ and ⑥. Fix the hook ⑥ side with adhesive (use an adhesive that allows later detaching).

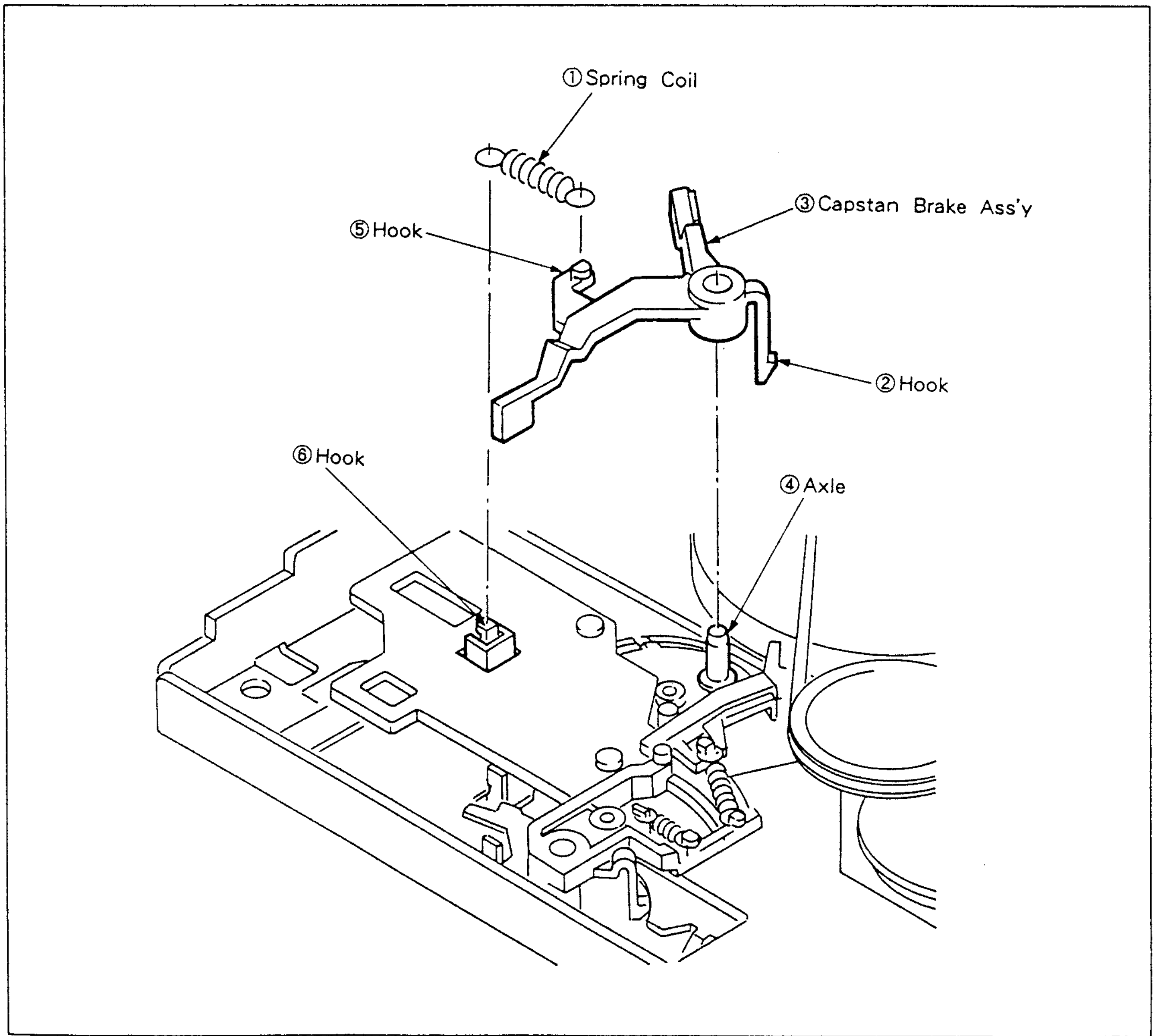

①Spring Coil
③Capstan Brake Ass'y
⑤Hook
②Hook
⑥Hook
④Axle

Fig. 5-7-4. Capstan Brake Ass'y

## 5-8. REEL TABLE DRIVE MECHANISM

### 5-8-1. Supply Reel Ass'y and Supply Reel Gear (See Fig. 5-8-1.)

**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the BAND HOLDER ASS'Y as instructed in 5-7-3.
3) Set the PLAY mode with the mode selector (VHJ-0050).
4) Remove the special washer ①, then remove the SUPPLY REEL ASS'Y ② and the washer ③.
5) Remove the special washer ④.
6) While pushing the SUPPLY BRAKE ASS'Y ⑤ in the direction of arrow A, remove the SUPPLY REEL GEAR ⑥ and the washer ⑦.

**Note:** Be sure that no dirt gets on the section where both brake shoes make contact.

**2. Remounting**

1) Apply a little oil (less than one drop) to the part of the axle ⑧ indicated by the arrow B, then mount the washer ⑦.
2) While pushing the SUPPLY BRAKE ASS'Y ⑤ in the direction of arrow A, mount the SUPPLY REEL GEAR ⑥ onto the axle ⑧.
3) Mount the special washer ④ to the axle ⑧.
4) Apply 1 drop of oil to the part of the axle ⑨ indicated by the arrow C, then mount the washer ③.
5) Mount the SUPPLY REEL ASS'Y ② onto the axle ⑨.
6) Perform reel table height adjustment as instructed in 6-2-1.
7) Mount the special washer ① onto the axle ⑨.
8) Mount the BAND HOLDER ASS'Y as instructed in 5-7-3.
9) Perform tension pole position adjustment as instructed in 6-3.
10) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

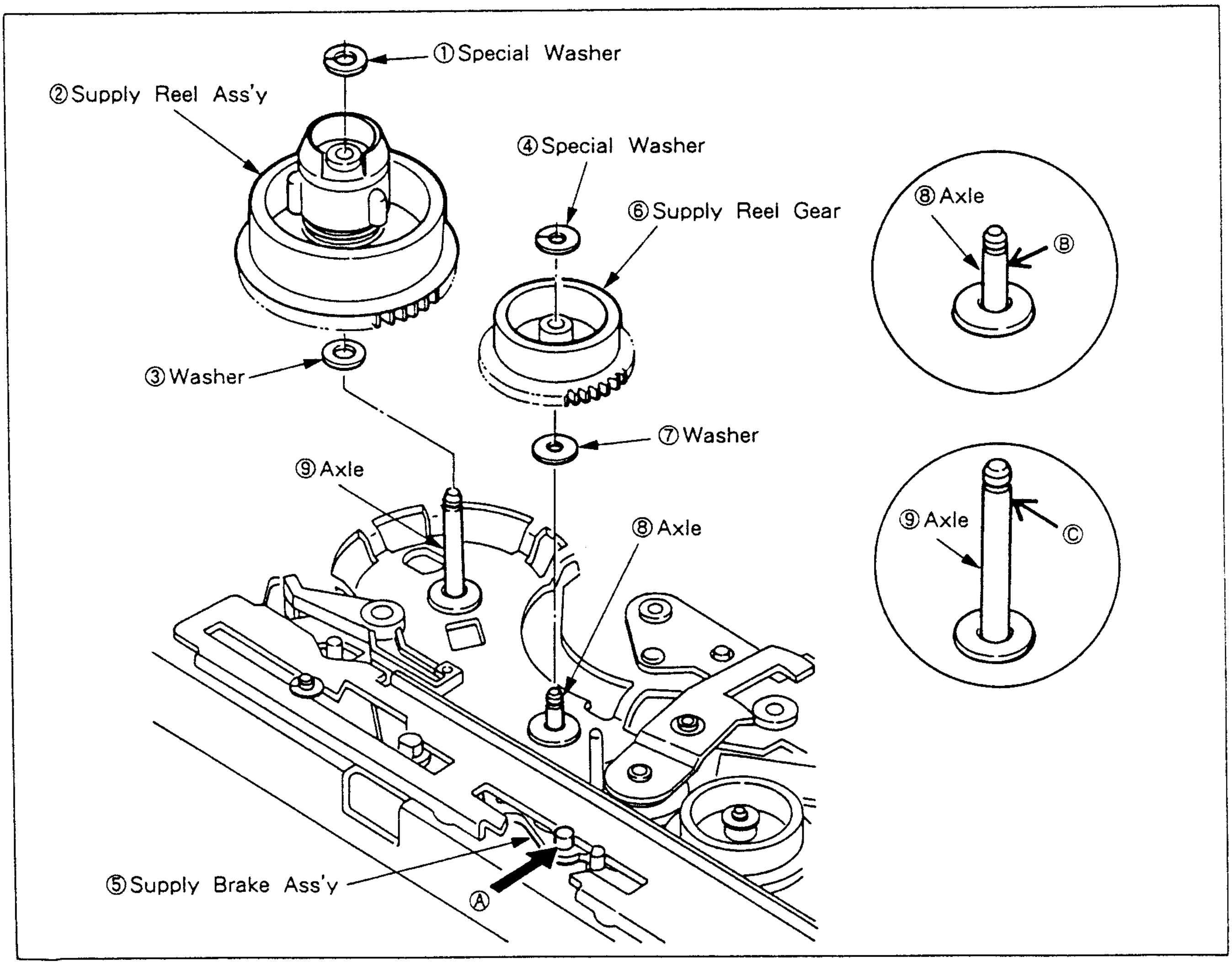


Fig. 5-8-1. Supply Reel Ass'y & Supply Reel Gear

### 5-8-2. Take-up Reel Ass'y (See Fig. 5-8-2.)

**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the special washer ①.
3) Push the SUB TAKE-UP BRAKE ASS'Y ② in the direction of arrow A to release the brake, then remove the TAKE-UP REEL ASS'Y ③ and the washer ④.

**Note :** Be sure that no dirt gets on the section where both brake shoes make contact.

**2. Remounting**

1) Apply 1 drop of oil to the part of the axle ⑤ indicated by the arrow B, then mount the washer ④.
2) While pushing the SUB TAKE-UP BRAKE ASS'Y ② in the direction of arrow A, mount the TAKE-UP REEL ASS'Y ③ onto the axle ⑤.
3) Perform reel table height adjustment as instructed in 6-2.
4) Mount the special washer ① onto the axle ⑤.
5) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

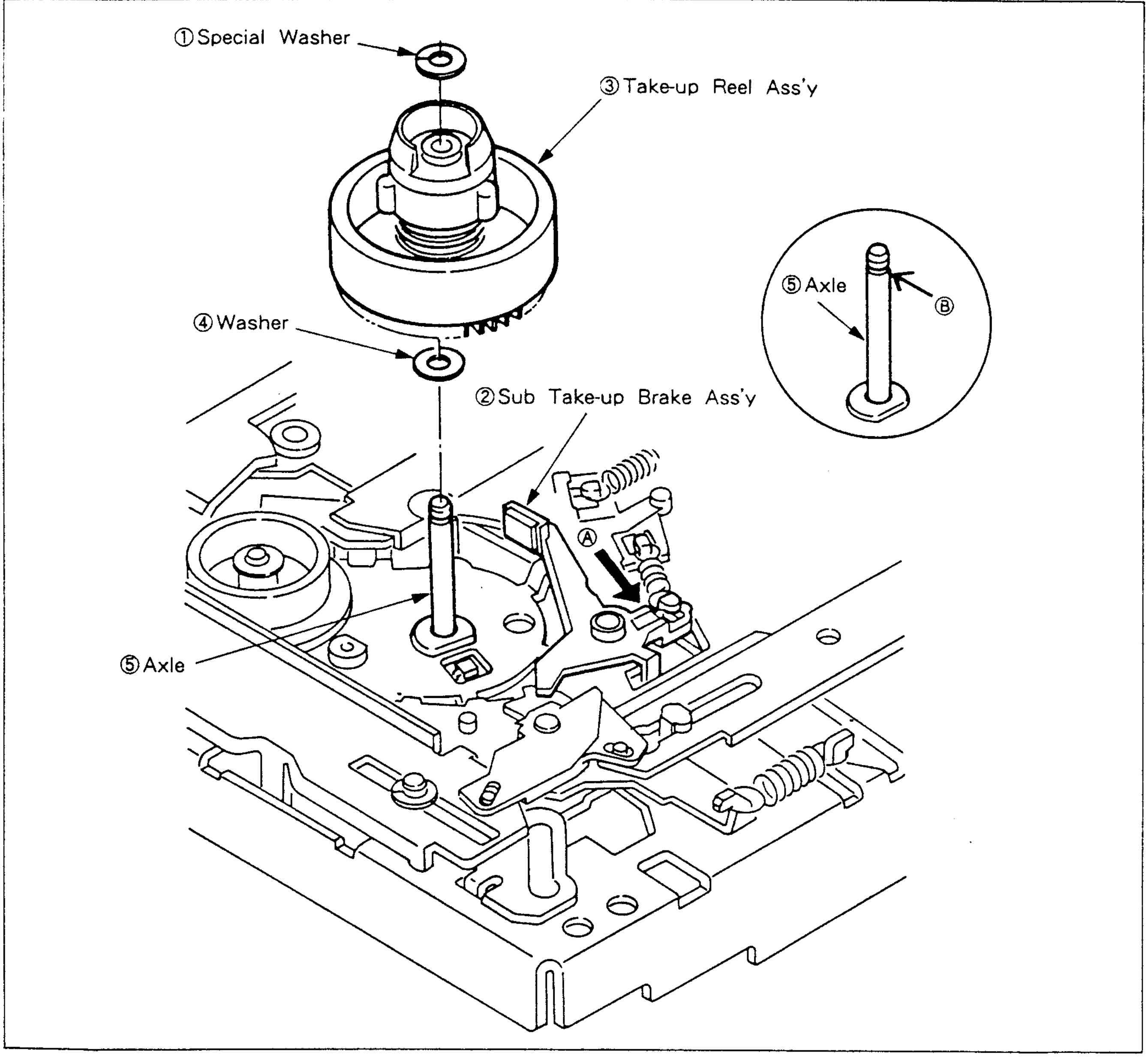


Fig. 5-8-2. Take-up Reel Ass'y

### 5-8-3. Take-up Reel Gear (See Fig. 5-8-3.)

**1. Removal**

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the TAKE-UP REEL ASS'Y as instructed in 5-8-2.
3) Remove the SUB TAKE-UP BRAKE ASS'Y as instructed in 5-7-1.
4) Remove the TAKE-UP BRAKE ASS'Y as instructed in 5-7-2.
5) Remove the special washer ①, then remove the TAKE-UP REEL GEAR ③ and the washer ④.

**2. Remounting**

1) Apply a little oil (less than one drop) to the part of the axle ⑤ indicated with an arrow.
2) Mount the washer ④ and the TAKE-UP REEL GEAR ③ onto the axle ⑤.
3) Mount the special washer ① onto the axle ⑤.
4) Mount the TAKE-UP BRAKE ASS'Y as instructed in 5-7-2.
5) Mount the SUB TAKE-UP BRAKE ASS'Y as instructed in 5-7-1.
6) Mount the TAKE-UP REEL ASS'Y as instructed in 5-8-2.
7) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.

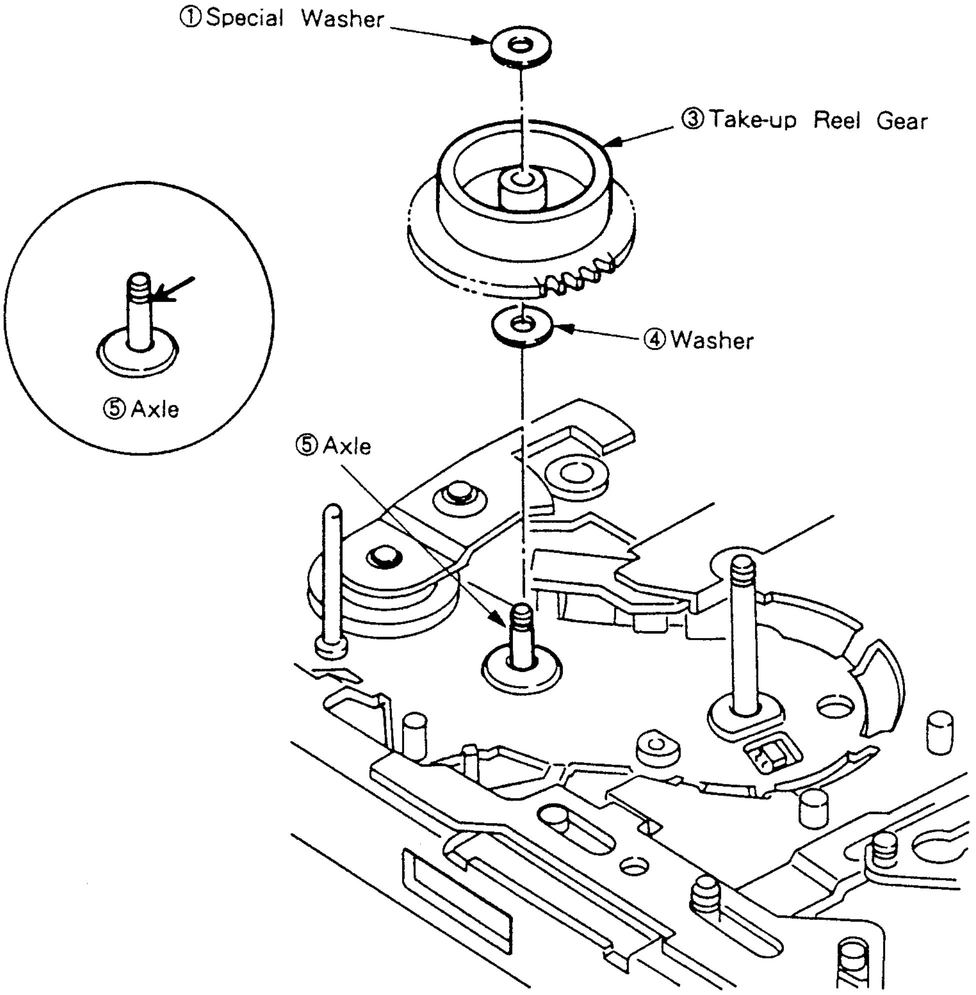


Fig. 5-8-3. TaKe-up Reel Gear

## 5-8-4. Reel Pulley and Friction Gear Ass'y (See Fig. 5-8-4.)

### 1. Removal

1) Remove the REEL DRIVE BELT ③.
2) Remove the special washer ④, then remove the REEL PULLEY ⑤.
3) Remove the special washer ⑥, then remove the FRICTION GEAR ASS'Y ⑦ and the washer ⑧.

### 2. Remounting

1) Apply one drop of oil to the parts of axles ⑨ and ⑩ indicated with arrows.
2) Mount the washer ⑧ and the FRICTION GEAR ASS'Y ⑦ onto the axle ⑨.
3) Mount the special washer ⑥ onto the axle ⑨.
4) Mount the REEL PULLEY ⑤ onto the axle ⑩.
5) Mount the special washer ④ onto the axle ⑩.
6) Set the REEL DRIVE BELT ③.

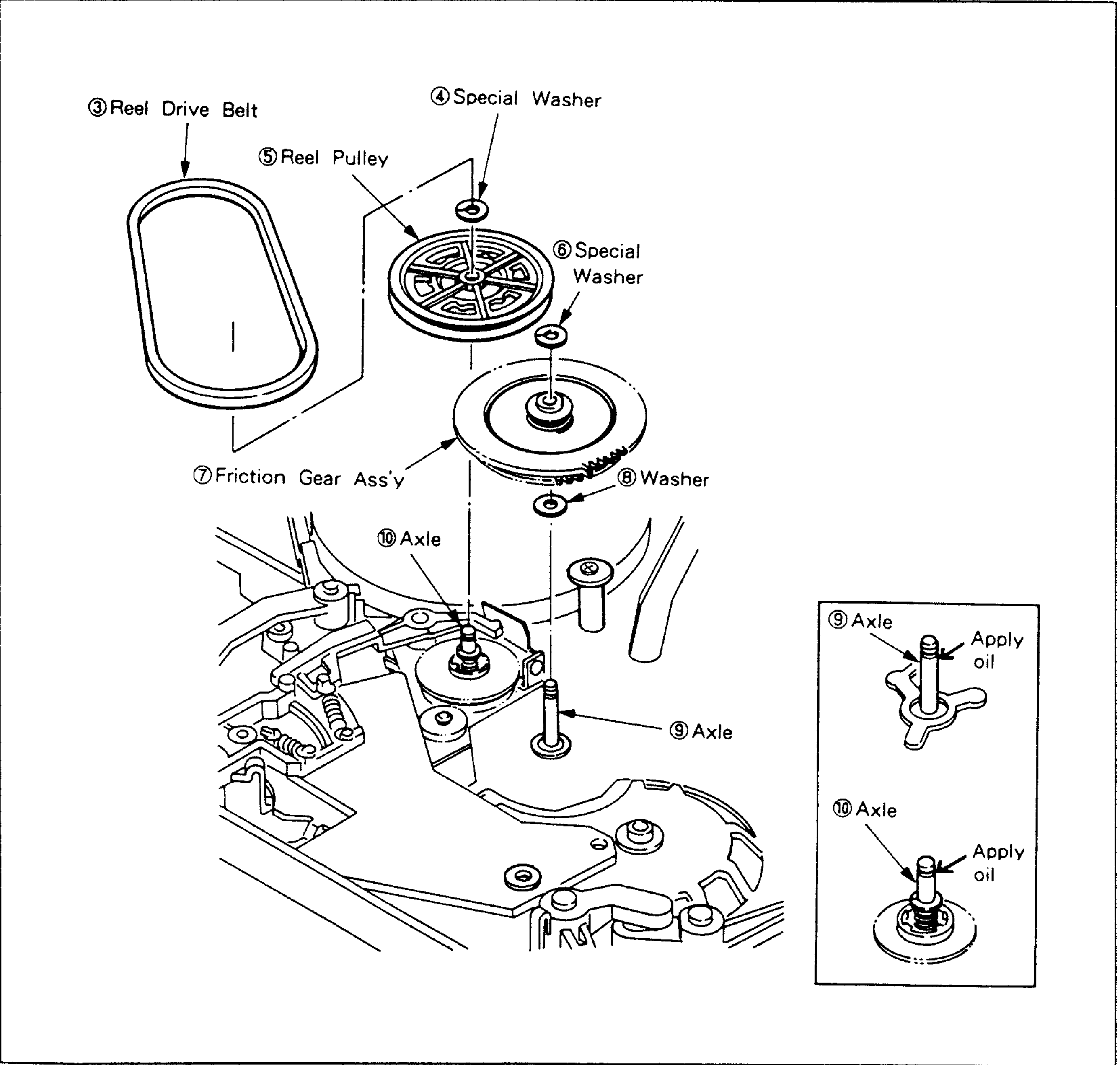

③Reel Drive Belt
④Special Washer
⑤Reel Pulley
⑥Special Washer
⑦Friction Gear Ass'y
⑧Washer
⑩Axle
⑨Axle
⑨Axle
Apply oil
⑩Axle
Apply oil

Fig. 5-8-4. Reel Pulley & Friction Gear

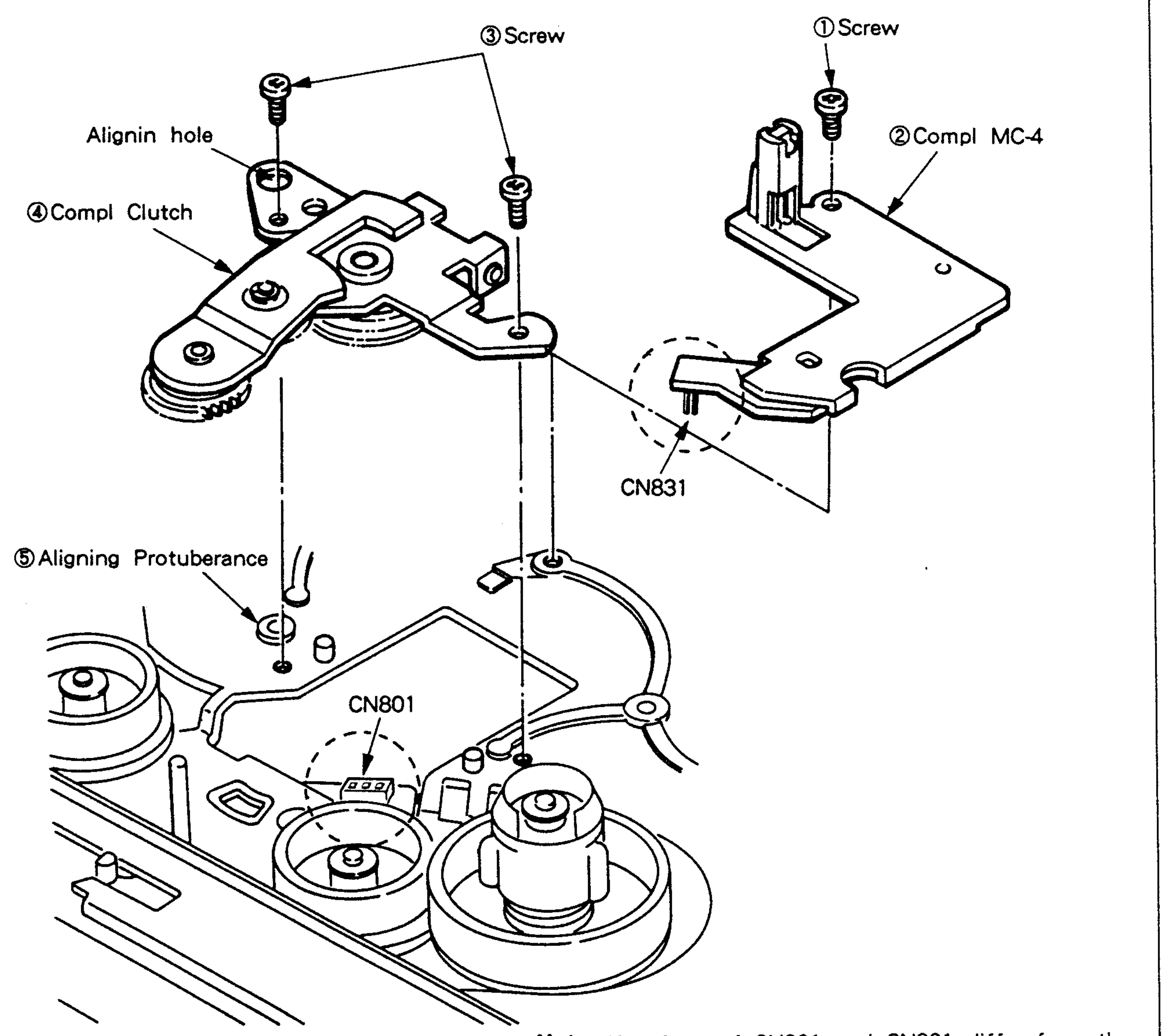
### 5-8-5. COMPL Clutch (See Fig. 5-8-5.)

#### 1. Removal

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1.
2) Remove the REEL DRIVE BELT and the REEL PULLEY as instructed in 5-8-4.
3) Remove the screw ①, then remove the COMPL MC-4 ②.
4) Remove the two screws ③, then remove the COMPL CLUTCH ④.

#### 2. Remounting

1) Mount the COMPL CLUTCH ④ with the two screws ③, aligning it with the protuberance ⑤.
2) After inserting the CN831 (COMPL MC-4) into the CN801 (COMPL MC-1), mount the COMPL MC-4 with the screw ①.
3) Mount the REEL PULLEY and REEL DRIVE BELT as instructed in 5-8-4.
4) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1.


③Screw
①Screw
Alignin hole
②Compl MC-4
④Compl Clutch
CN831
⑤Aligning Protuberance
CN801

**Note:** The form of CN801 and CN831 differ from the P90 mechanism.

Fig. 5-8-5. Compl Clutch

### 5-8-6. Clutch Change Lever and Clutch Lever Ass'y (See Fig. 5-8-6.)

**1. Removal**

1) Remove the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.
2) Remove the PULLEY BRACKET, the REEL DRIVE BELT and the REEL PULLEY as instructed in 5-8-4.
3) Remove the SPRING COIL ①.
4) Unhook the hook ②, then remove the CLUTCH CHANGE LEVER ③.
5) Unhook the hook ⑤, then remove the CLUTCH LEVER ASS'Y ⑥.

**2. Remounting**

1) Mount the CLUTCH LEVER ASS'Y ⑥ onto the axle ⑦. Confirm that the hook ⑤ is hooked to the chassis.
2) Mount the CLUTCH CHANGE LEVER ③ onto the axle ⑧. Confirm that the hook ② is hooked to the chassis.
3) Hook the SPRING COIL ① between the hooks ⑨ and ⑩.
4) Mount the PULLEY BRACKET, the REEL DRIVE BELT and the REEL PULLEY as instructed in 5-8-4.
5) Mount the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.

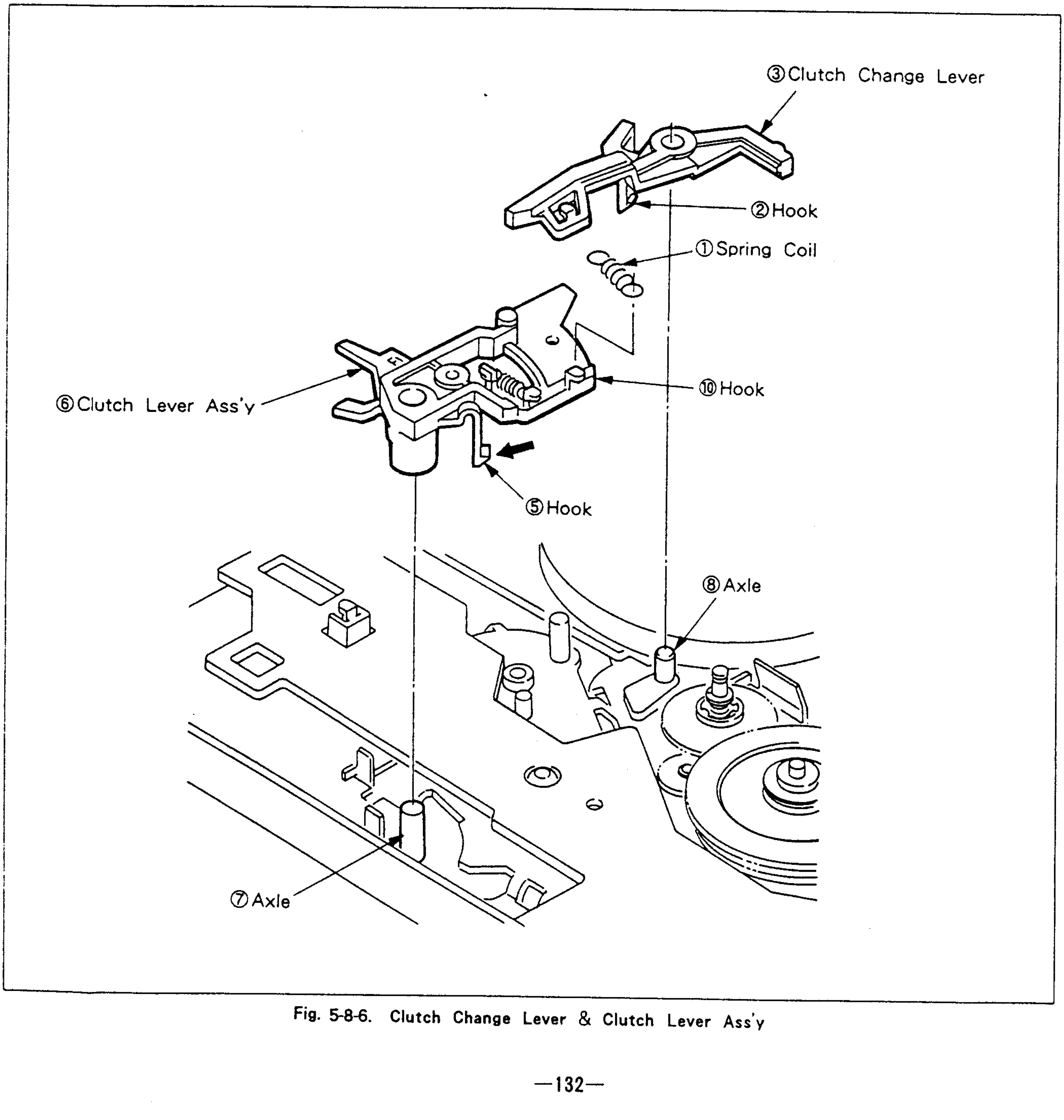


Fig. 5-8-6. Clutch Change Lever & Clutch Lever Ass'y

## 5-9. CAPSTAN MOTOR (See Fig. 5-9-1.)

**1. Removal**

1) Remove the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.
2) Remove the CAPSTAN MOTOR ⑥ connector.
3) Remove the REEL DRIVE BELT ② from the CAPSTAN MOTOR PULLEY ①.
4) Remove the two screws ④ fixing the COMPL CASSETTE MECHANISM TOP BOARD ③, then slide the TOP BOARD ③ backward.
5) Remove the three screws ⑤, then remove the CAPSTAN MOTOR ⑥.

**Note** : Take care not to scratch or soil the capstan axle.

**2. Remounting**

1) Mount the CAPSTAN MOTOR ⑥ with the three screws ⑤.
2) Connect the CAPSTAN MOTOR ⑥ connector.
3) Mount the TOP BOARD ③ with the two screws ④.
4) Fit the REEL DRIVE BELT ② around the CAPSTAN MOTOR PULLEY ① and the REEL PULLEY ⑦.
5) Mount the CAPSTAN BRAKE ASS'Y as instructed in 5-7-4.

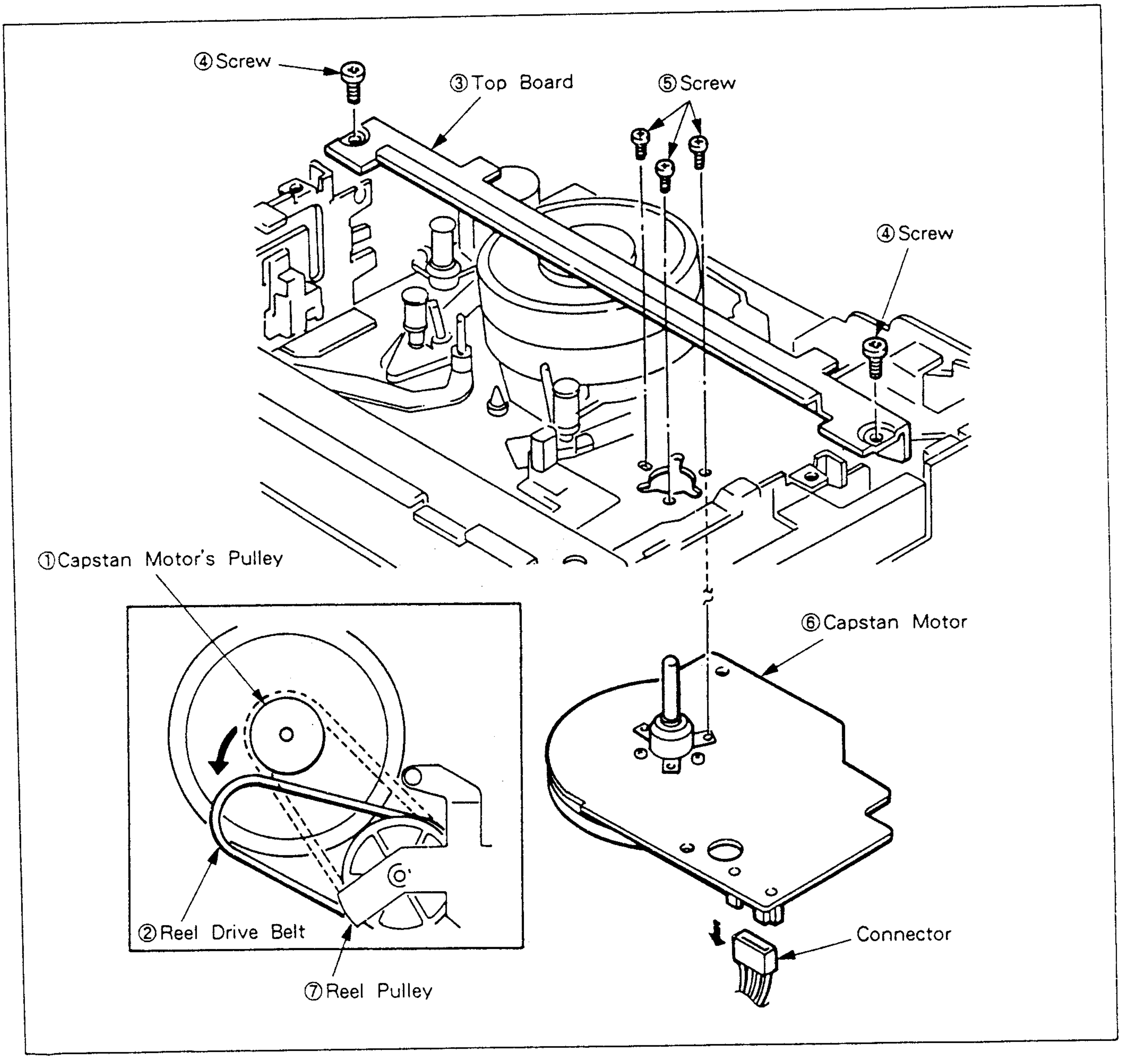

④Screw
③Top Board
⑤Screw
④Screw
①Capstan Motor's Pulley
⑥Capstan Motor
②Reel Drive Belt
Connector
⑦Reel Pulley

Fig. 5-9-1. Capstan Motor

## 5-10. FIXED GUIDE, FE HEAD LEVER ASS'Y

### 5-10-1. S-Side Fixed Guide and FE Lever Ass'y (See Fig. 5-10-1.)

### 1. Removal

1) Remove the special nut ①, then remove the GUIDE PIPE ③ and the special washer ② (lower), in that order.
2) Remove the SPRING COIL ⑤.
3) Remove the FTE HEAD connector, then remove the FE HEAD LEVER ASS'Y ⑦.

### 2. Remounting

1) Mount the FE LEVER ASS'Y ⑦ onto the axle ⑧.
2) Hook the SPRING COIL ⑤ between the chassis notch ⑨ and the FE LEVER ASS'Y hook ⑩.
3) Mount the special washer ② (lower), the GUIDE pipe ③ and the special nut ① to the axle ⑧, in that order. At that time, do not excessively tighten the special nut ① to avoid idle rotation of the axle rivet. The height of fixing guide on the inlet side is not required.
4) Connect the connector to the FTE HEAD.

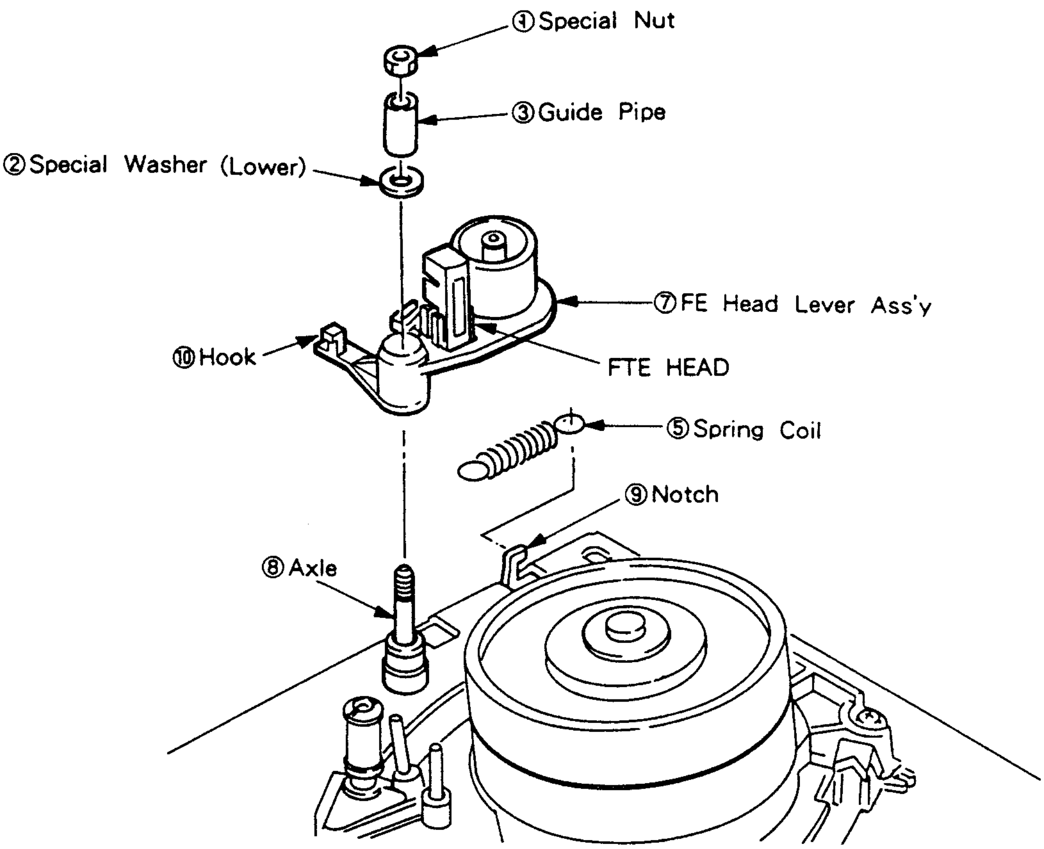

①Special Nut
③Guide Pipe
②Special Washer (Lower)
⑦FE Head Lever Ass'y
⑩Hook
FTE HEAD
⑤Spring Coil
⑨Notch
⑧Axle

Fig. 5-10-1. Fixed Guide (S) & FE Lever Ass'y

### 5-10-2. Impedance Roller, FTE Head (See Fig. 5-10-2.)

**1. Removal**

1) Remove the FTE HEAD (full track erase head) ① connector.
2) Remove the special washer ②, then remove the IMPEDANCE ROLLER ③ and the washer ④.
3) Open the hook ⑤ a little and remove the FTE HEAD ①.

**Note** : Take care not to open the hook too much, otherwise it may be deformed or broken.

**2. Remounting**

1) Mount the FTE HEAD ① onto the FE HEAD LEVER ASS'Y ⑥. Confirm that the hook ⑤ is hooked to the FTE HEAD ①.
2) Mount the washer ④ and the IMPEDANCE ROLLER ③, in that order, onto the axle ⑦, then mount the special washer ②.
3) Connect the connector to the terminal of the FTE HEAD ①.

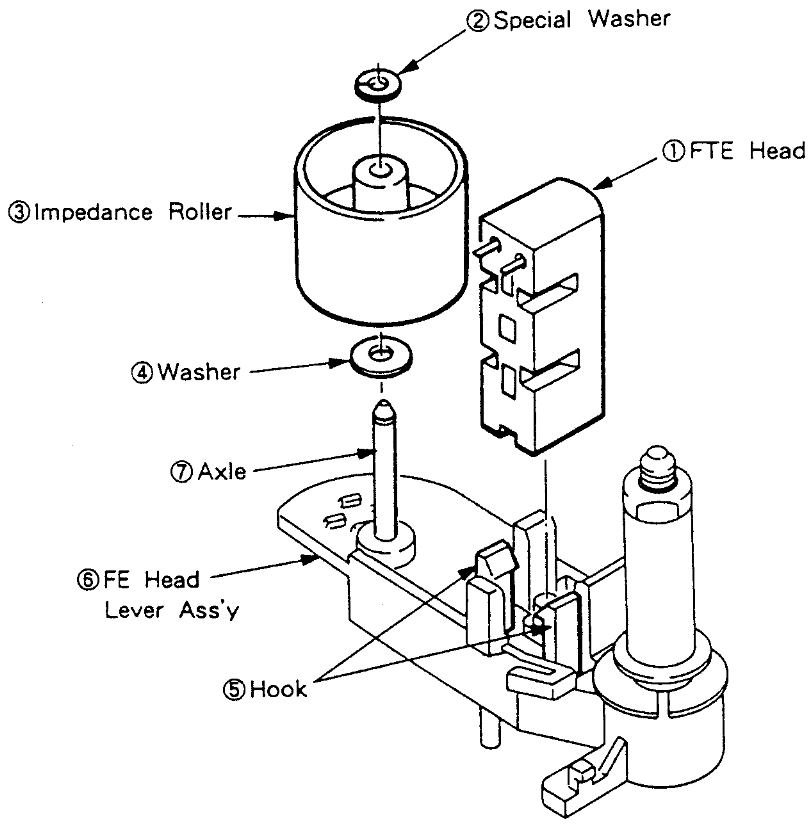

②Special Washer
①FTE Head
③Impedance Roller
④Washer
⑦Axle
⑥FE Head Lever Ass'y
⑤Hook

Fig. 5-10-2. Impedance Roller & FTE Head

### 5-10-3. Exit side Fixed Guide (See Fig. 5-10-3.)

#### 1. Removal

1) Remove the CAP ①.
2) Remove the special NUT ②, then remove the special washer ③ (upper), the GUIDE PIPE ④, the special washer ③ (lower) and the sleeve ⑤, in that order.

#### 2. Remounting

1) Mount the sleeve ⑤, the special washer ③ (lower), the GUIDE PIPE ④, the special washer ③ (upper) and the special NUT ②, in that order, to the axle ⑥.
2) Mount the CAP ① onto the axle ⑥.

**Note:** There is no need of height adjustment of the exit side fixed guide.

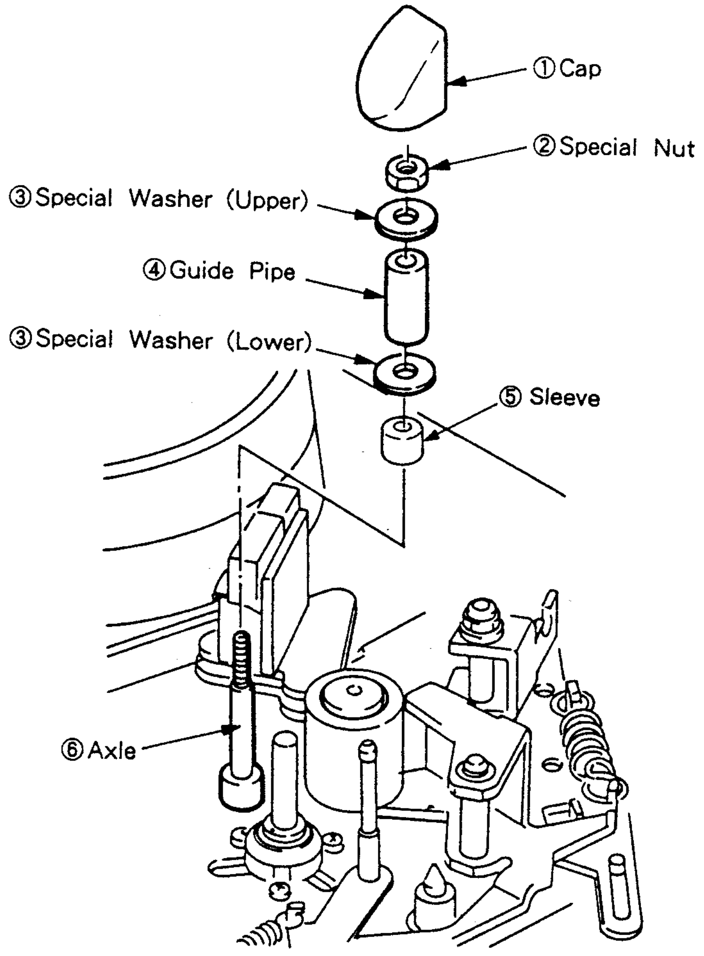

①Cap
②Special Nut
③Special Washer (Upper)
④Guide Pipe
③Special Washer (Lower)
⑤ Sleeve
⑥Axle

Fig. 5-10-3. Fixed Guide (T)

## 5-11. DRUM SECTION

### 5-11-1. Drum Motor (rotor, stator) (See Fig. 5-11-1.)

**1. Removal**

1) Remove the screw ①, then remove the CYLINDER EARTH ASS'Y ②.
2) Remove the two screws ③, then remove the ROTOR ④ and SPACER.
3) Remove the STATOR board connector ⑩.
4) Remove the three screws ⑤, then remove the STATOR ⑥.

**2. Remounting**

1) Mount the STATOR ⑥ with the three screws ⑤.
2) Mount the SPACER ⑪ on to the AXLE ⑫.
3) While aligning the ROTOR oval hole ⑦ with the ROTOR DISK hole ⑧, mount the ROTOR with the two screws ③.
4) Insert the connector ⑩.
5) While aligning the CYLINDER EARTH ASS'Y ② protuberance with the chassis hole ⑨, mount it with the screw ①.

**Note 1 :** Use a torque driver (VHJ-0014) for mounting the STATOR ⑥ and the ROTOR ④. Set fastening torque to 3kg-cm.

**Note 2 :** When the drum unit has been replaced, perform a tape path adjustment as instructed in 6-4. and perform a CH-1/CH-2 switching position adjustment of the servo circuit.

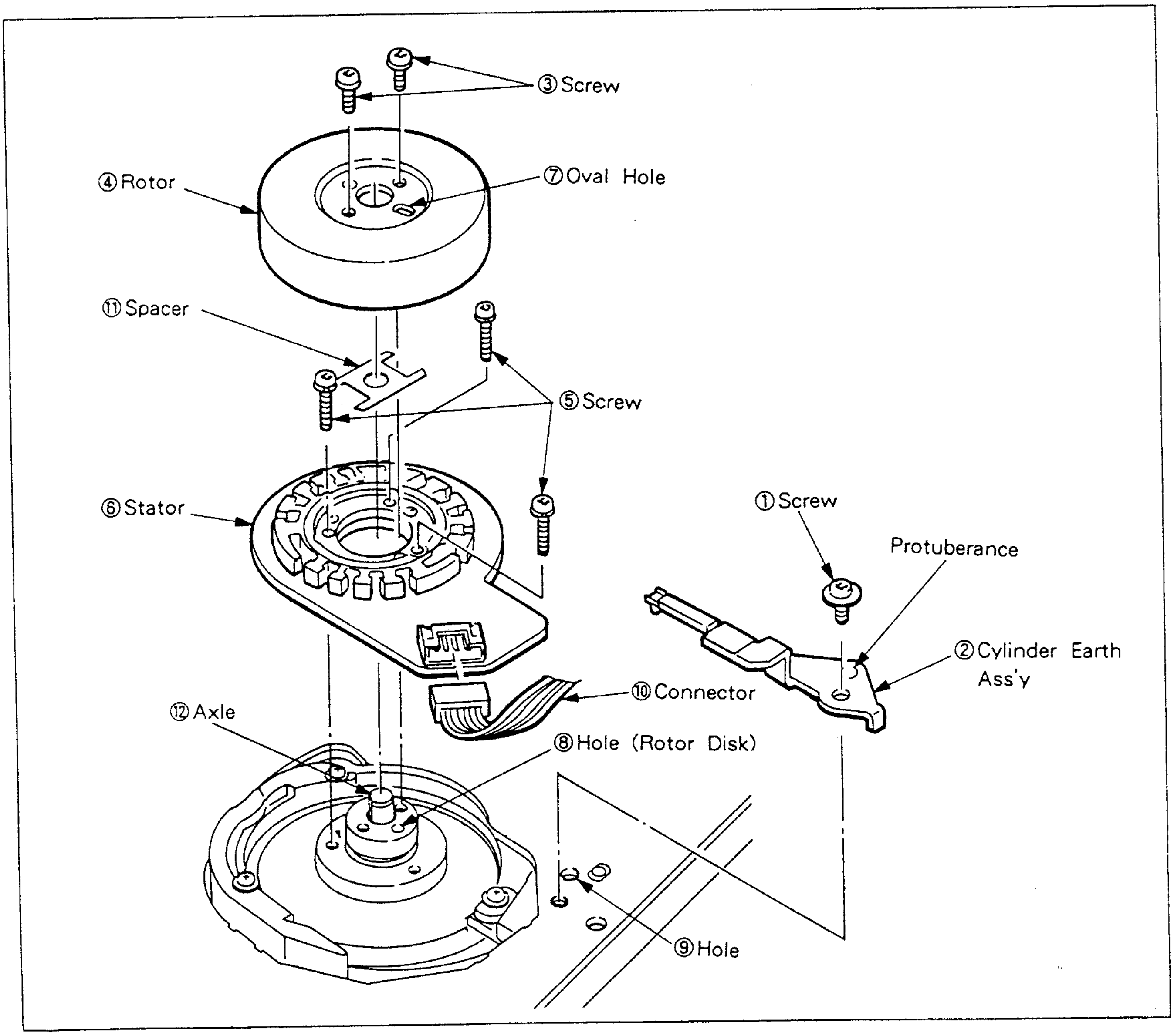

③Screw
④Rotor
⑦Oval Hole
⑪Spacer
⑤Screw
⑥Stator
①Screw
Protuberance
②Cylinder Earth Ass'y
⑩Connector
⑫Axle
⑧Hole (Rotor Disk)
⑨Hole

Fig. 5-11-1. Drum Motor

### 5-11-2. Drum Unit (See Fig. 5-11-2.)

**1. Removal**

1) For some models with the board located above the upper drum, remove the board.
2) Remove the flexible P.C.B. ① from the PRE-AMP UNIT (take care not to pull the flexible P.C.B. in the upward direction).
3) Remove the LOAD RACK only, as instructed in 5-4-1.
4) Remove the three screws ②, then remove the drum unit ③.

   **NOTE** : When removing and remounting the drum unit, handle it carefully to protect it from scratches and dirt.

**2. Remounting**

1) While aligning the drum unit ③ to the protuberance, mount it to the drum base (CYLINDER BASE) ⑤ with the three screws ②.
2) Mount the ROAD RACK as instructed in 5-4-1.
3) Insert the flexible P.C.B. into the PRE-AMP UNIT.
4) Clean the drum unit.
5) Perform the tape path adjustment as instructed in 6-4. and perform the CH-1/CH-2 switching position adjustment of the servo circuit.

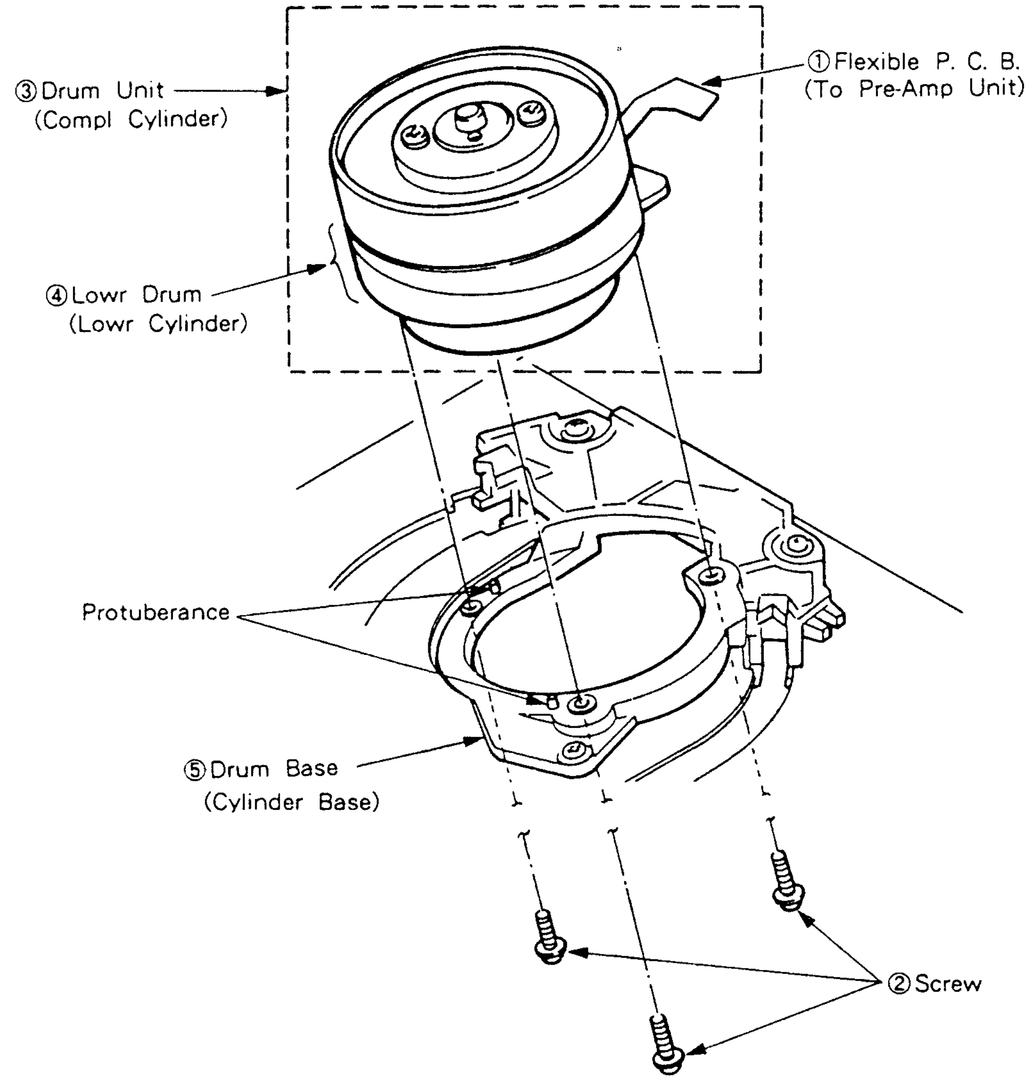

③Drum Unit
(Compl Cylinder)
①Flexible P. C. B.
(To Pre-Amp Unit)
④Lowr Drum
(Lowr Cylinder)
Protuberance
⑤Drum Base
(Cylinder Base)
②Screw

Fig. 5-11-2 Drum Unit (Compl Cylinder)

### 5-11-3. Upper Drum (Upper Cylinder)

**1. Removal**

1) Remove the two screws ① (see Fig. 5-11-3).
2) In case the RE (ROTARY ERASE) HEAD is attached to the upper drum (UPPER CYLINDER), remove the lead wires soldered from the P.C. board (see Fig. 5-11-4.).
3) Turn the head removing jig (VHJ-0041) handle ② counterclockwise to lift up the stopper ③ (see Fig. 5-11-5.).
4) Insert the two long screws ④ of the jig into the screw holes ⑥ located on the head chip side of the upper drum (UPPER CYLINDER) ⑤, then mount by turning the handle clockwise.
5) While holding the jig so that the upper drum ⑤ does not rotate, turn the handle ② clockwise to remove the upper drum.
6) Remove the jig from the upper drum.

**Note :** Handle parts carefully to protect the drum from scratches and dirt, and the video head from damage.

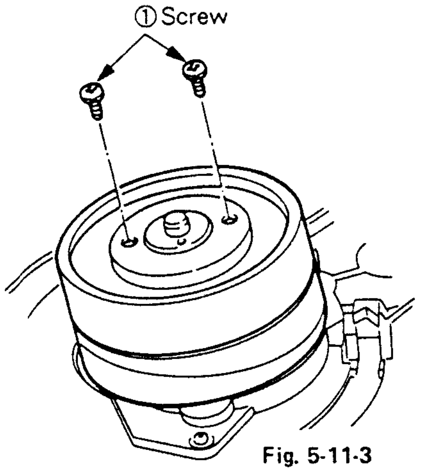


Fig. 5-11-3

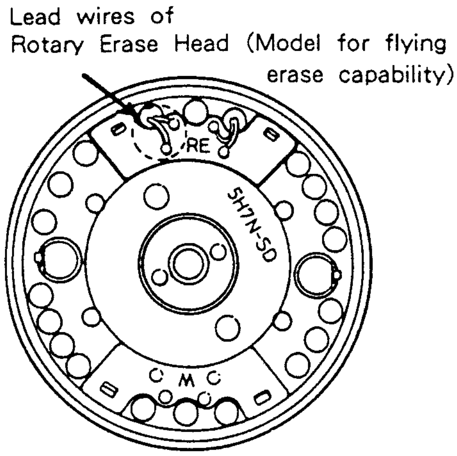

Lead wires of
Rotary Erase Head (Model for flying erase capability)
RE
5H7N-SD
C M C

Fig. 5-11-4

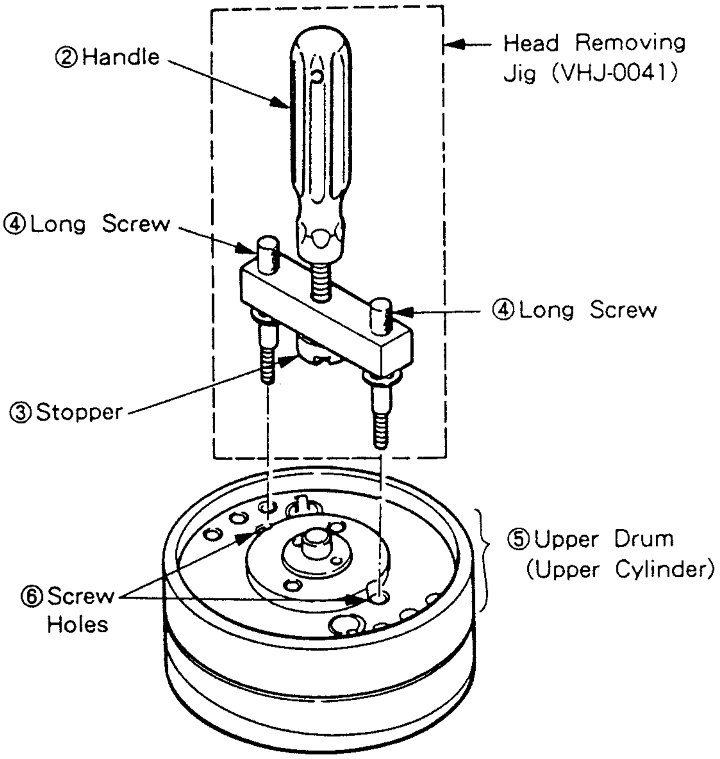

②Handle
Head Removing Jig (VHJ-0041)
④Long Screw
④Long Screw
③Stopper
⑤Upper Drum (Upper Cylinder)
⑥Screw Holes

Fig. 5-11-5

Upper Drum (Upper Cylinder)

2. **Remounting (See Fig. 5-11-6.)**

1) Confirm that surfaces where the flywheel and the upper drum (UPPER CYLINDER) are engaged or make contact portion are free from scratches and dirt.
2) The code name ① of the drum is printed on the video head side of the upper drum ⑤ SP CH-1 (channel A, plus azimuth). The code name ① is set with in the rotary transformer terminal round hole side ② position of lower drum (LOWER CYLINDER), so that the two screw holes ③ of the upper drum are aligned with the two screw holes ④ of the flywheel. (Refer to 3. Recognizing the SP CH-1 Head side).
3) In case the RE (ROTARY ERASE) HEAD is attached to the upper drum, pass the lead wires through the lead wire hole. (See Fig.5-11-4.)
4) While keeping the upper drum ⑤ parallel to the lower drum (LOWER CYLINDER) ⑧, insert it completely into the flywheel.
5) Temporarily tighten the two screws ⑦ alternately a little at a time, then tighten them to a torque of 6kg-cm using a torque driver (VHJ-0014) and a 3mm bit (VHJ-0045).
6) In case the RE head is attached to the upper drum ⑤, solder the lead wires to the P.C. board. Solder the red lead wire to the R terminal, and the yellow lead wire to the Y terminal.

**Note** : When the upper drum has been replaced, perform a tape path adjustment as instructed in 6-4. and CH-1/CH-2 switching position adjustment of the servo circuit.

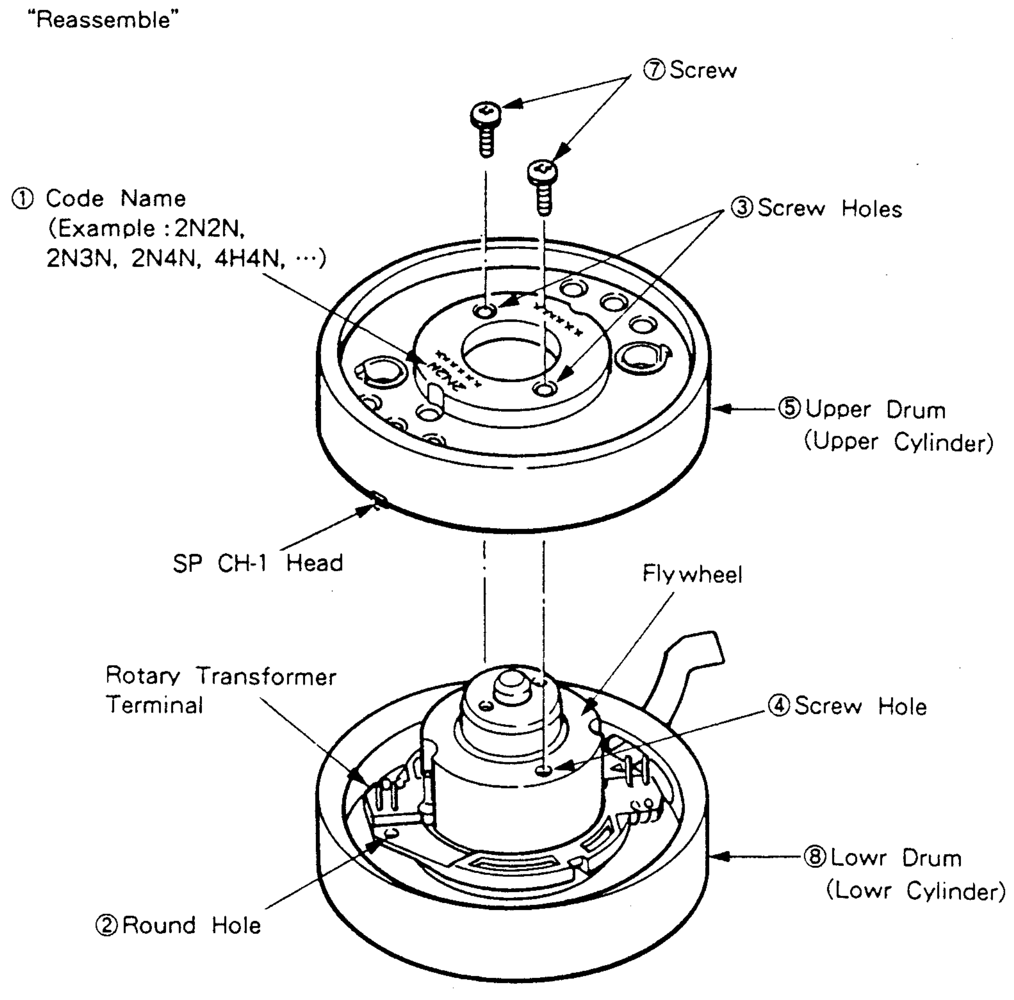
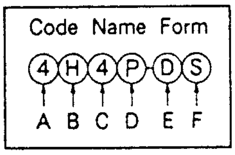

"Reassemble"
⑦Screw
① Code Name
(Example : 2N2N, 2N3N, 2N4N, 4H4N, …)
③Screw Holes
⑤Upper Drum
(Upper Cylinder)
SP CH-1 Head
Flywheel
Rotary Transformer Terminal
④Screw Hole
⑧Lowr Drum
(Lowr Cylinder)
②Round Hole

Fig. 5-11-6.

### 3. Recognizing the SP CH-1 Head Side

No playback picture can be obtained if the video head is not wired as a pair with the rotary transformer located inside the lower drum rotating section. Therefore, mounting position should be matched when mounting the upper drum. In the P90 mechanism series, the code name of the drum is printed on the SP CH-1 (CH-A, plus azimuth) side as a mark for mounting the upper drum. (See Fig. 5-11-7.) This code name differs according to the drum type, but its basic form is as follows :


Code Name Form
4 H 4 P D S
A B C D E F

A = Number of head bases
B = "N" for normal audio
"H" for HI-FI audio
C = Number of heads
D = TV system ("N" or "P")
EF = Code for detailed classification. Depending on drum type, it can also be just one character, or a blank space.

Examples of Detailed Classification Codes
V = Head with level difference
D = Compatible with digital units
S = SVHS-compatible

Examples of Code Names
2N2P, 2N2P-L, 2N2P-V, 2N2P-D, 2N3P, 2N4P, 4H4P, 4H4P-D

Moreover, there is a round hole with marking purposes on the SP CH-1 (CH-A, plus azimuth) side of the lower drum rotary transformer terminal. As shown in Fig. 5-11-8, there are two types of rotary transformer terminals (the number of pins differs according to the number of heads).

**Note :** When ordering parts such as drums (CYLINDERS), do not use the code names ; always refer to the parts list and order with the specified part numbers.

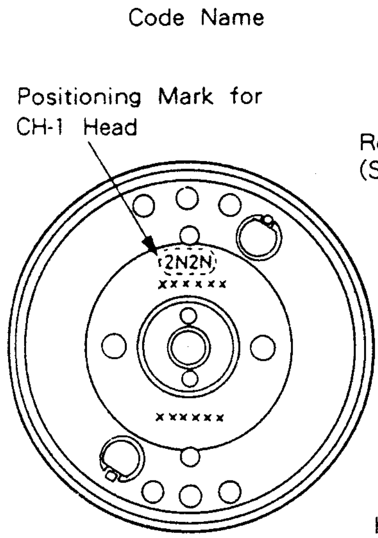

Code Name
Positioning Mark for CH-1 Head
2N2N
xxxxxx
xxxxxx

Fig. 5-11-7. Upper Drum

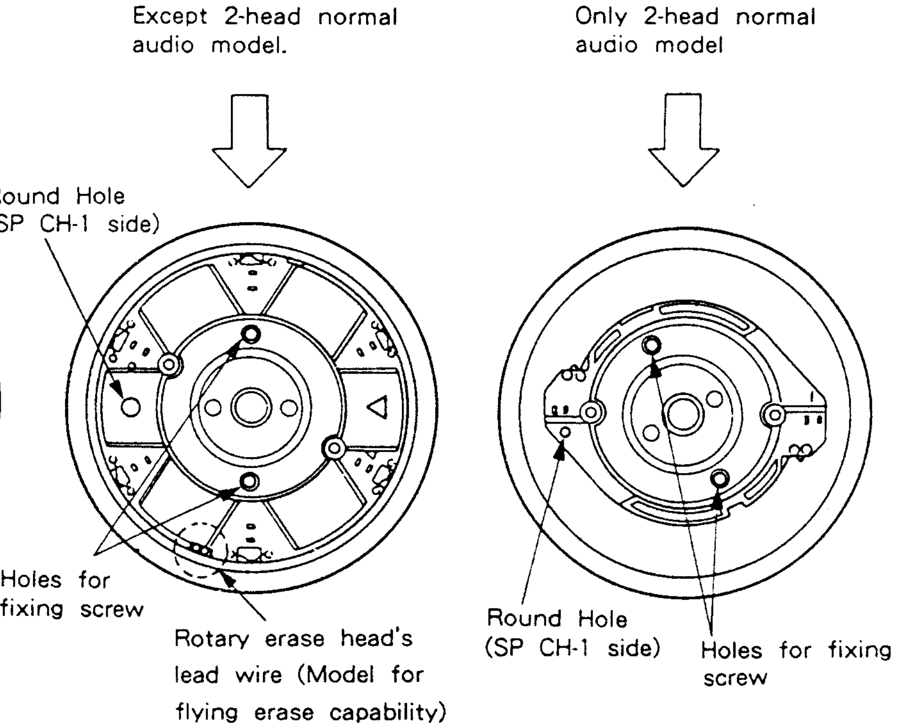
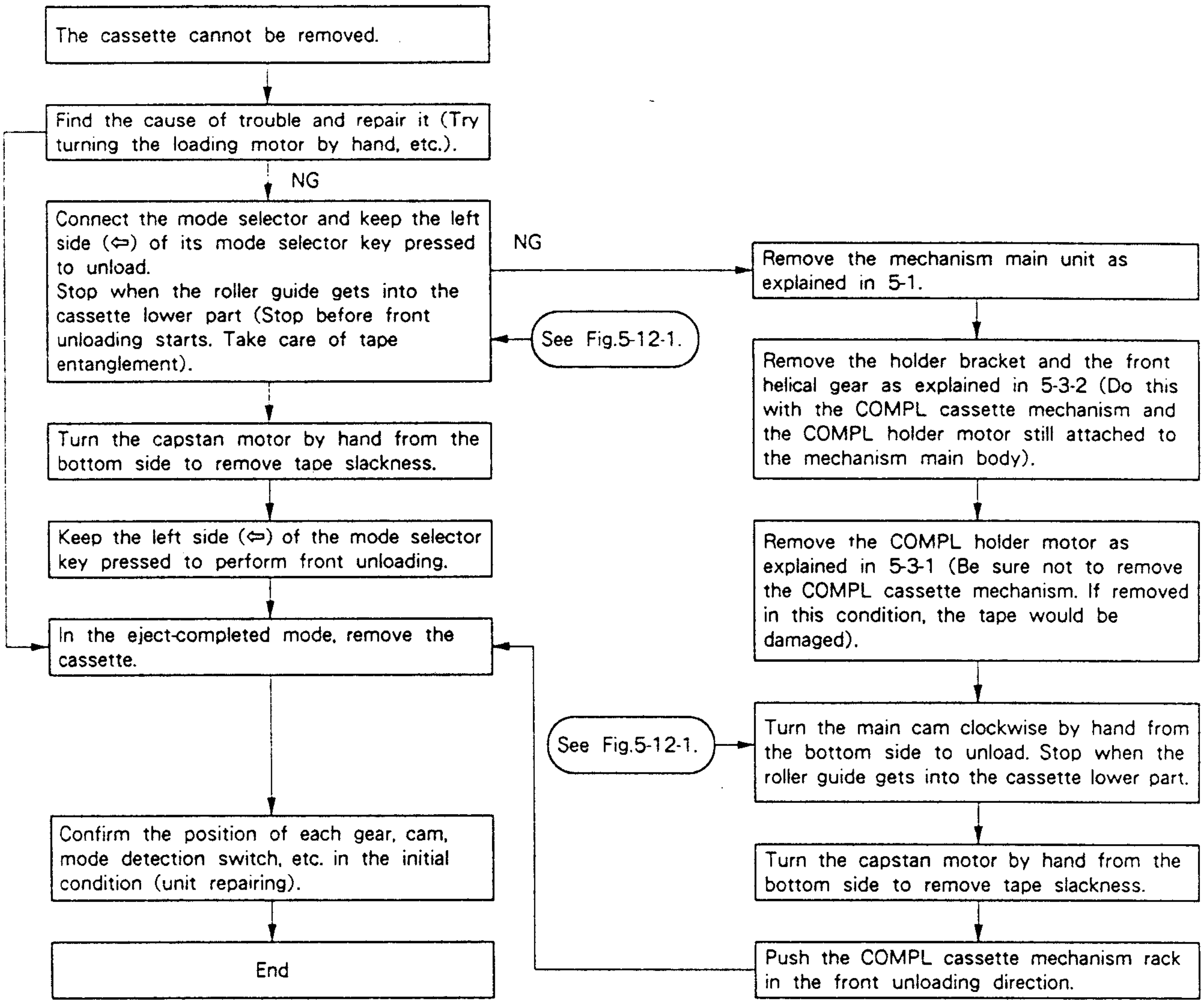

Except 2-head normal audio model.
Only 2-head normal audio model
Round Hole (SP CH-1 side)
Holes for fixing screw
Rotary erase head's lead wire (Model for flying erase capability)
Round Hole (SP CH-1 side)
Holes for fixing screw

Fig. 5-11-8. Lower Drum

## 5-12. HOW TO PROCEED WHEN THE CASSETTE CANNOT BE REMOVED



The cassette cannot be removed.

Find the cause of trouble and repair it (Try turning the loading motor by hand, etc.).

NG

Connect the mode selector and keep the left side (⇦) of its mode selector key pressed to unload.
Stop when the roller guide gets into the cassette lower part (Stop before front unloading starts. Take care of tape entanglement).

See Fig.5-12-1.

Turn the capstan motor by hand from the bottom side to remove tape slackness.

Keep the left side (⇦) of the mode selector key pressed to perform front unloading.

In the eject-completed mode, remove the cassette.

Confirm the position of each gear, cam, mode detection switch, etc. in the initial condition (unit repairing).

End

NG

Remove the mechanism main unit as explained in 5-1.

Remove the holder bracket and the front helical gear as explained in 5-3-2 (Do this with the COMPL cassette mechanism and the COMPL holder motor still attached to the mechanism main body).

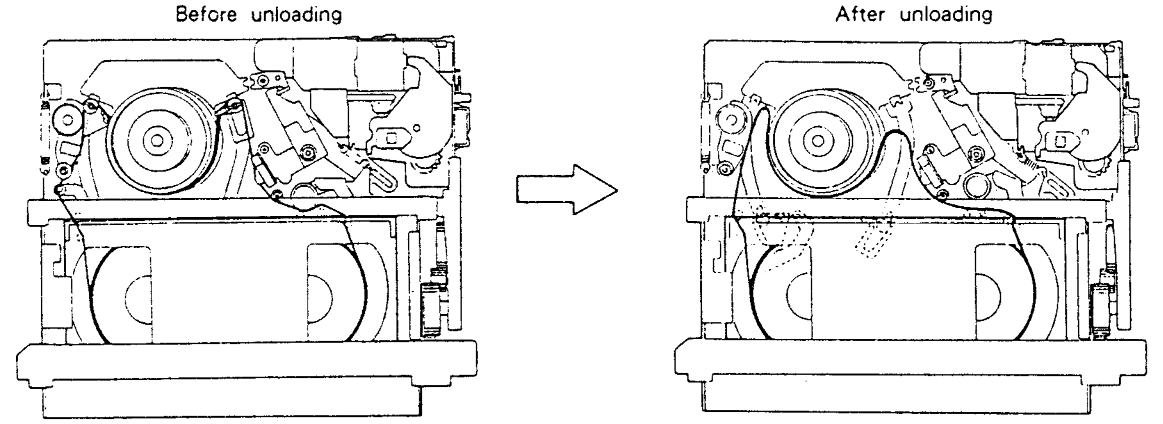
Remove the COMPL holder motor as explained in 5-3-1 (Be sure not to remove the COMPL cassette mechanism. If removed in this condition, the tape would be damaged).

See Fig.5-12-1.

Turn the main cam clockwise by hand from the bottom side to unload. Stop when the roller guide gets into the cassette lower part.

Turn the capstan motor by hand from the bottom side to remove tape slackness.

Push the COMPL cassette mechanism rack in the front unloading direction.



Before unloading

After unloading

Perform unloading using the mode selector.

First rotate the capstan motor by hand from the bottom to take-up the tape slack, and perform front-unloading using the mode selector.

Fig. 5-12-1

## 5-13. AUTO HEAD CLEANER MECHANISM (See. Fig. 5-13-1 • Fig. 5-13-2 • Fig. 5-13-3)

### 1. Removal

**Note:**
- Do not hold the ROLLER CLEANER ASS'Y ① by bare hand. Use tweezers and gloves not soiled with grease or dust, etc.
- When the cleaning function deteriorates and replacing only ROLLER CLEANER ASS'Y ①, there is no need to perform item 4).

1) Make sure that the ROLLER CLEANER ASS'Y ① is not pressed against a drum (cylinder).
2) Remove the PRE-AMP UNIT and the PRE-AMP BRACKET.
3) Remove screw ②, then lift up and remove the BRACKET CLEANER ASS'Y ③.
4) With the BRACKET CLEANER ASS'Y ③ is fixed by finger, turn the LEVER CLEANER ASS'Y ④ 35° to 40° to clockwise, then lift up and remove.
5) Remove the stop washer ⑤, then remove the ROLLER CLEANER ASS'Y ①.

### 2. Remounting

1) Mount the ROLLER CLEANER ASS'Y ① and the stop washer ⑤ to the axle ⑥ of LEVER CLEANER ASS'Y.
   Mount the ROLLER CLEANER ASS'Y ① so that the mark shown in Fig. 5-13-2 is up side. If the mark is down side, noise may occur.
2) Mount the SPRING COIL ⑧ and the LEVER CLEANER ASS'Y ④ to the axle ⑦ of BRACKET CLEANER ASS'Y. At this time, hook the SPRING COIL ⑧ to the hole ⑨ of the LEVER CLEANER ASS'Y and the bent part ⑩ of the BRACKET CLEANER ASS'Y. "A part" of the LEVER CLEANER ASS'Y should be under "B part" of the BRACKET CLEANER ASS'Y.
3) Fix the BRACKET CLEANER ASS'Y ③ on screw hole ⑫ by screw ②. Before fasten screw ②, insert hole ⑪ of the BRACKET CLEANER ASS'Y to axle ⑯, axle ⑦ to hole ⑬ to match positions. Pin ⑭ of the LEVER CLEANER ASS'Y should be run along the circumference of the MAIN CAM ⑮ not to be came off.
4) The upper side of the lower drum should be within approx. 2mm from the lower side of the ROLLER CLEANER ASS'Y as shown in Fig. 5-13-3.
5) Mount the PRE-AMP BRACKET and the PRE-AMP UNIT.

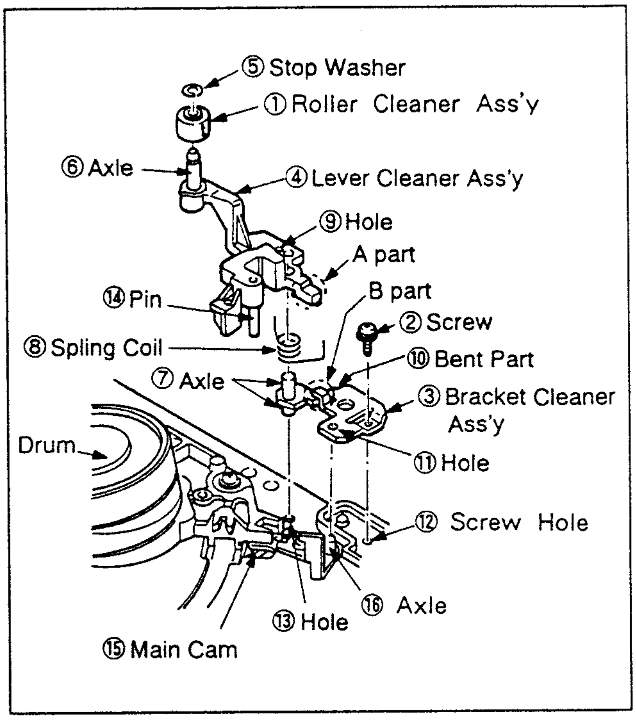

⑤ Stop Washer
① Roller Cleaner Ass'y
⑥ Axle
④ Lever Cleaner Ass'y
⑨ Hole
A part
⑭ Pin
B part
② Screw
⑧ Spling Coil
⑩ Bent Part
⑦ Axle
③ Bracket Cleaner Ass'y
Drum
⑪ Hole
⑫ Screw Hole
⑯ Axle
⑬ Hole
⑮ Main Cam

Fig. 5-13-1

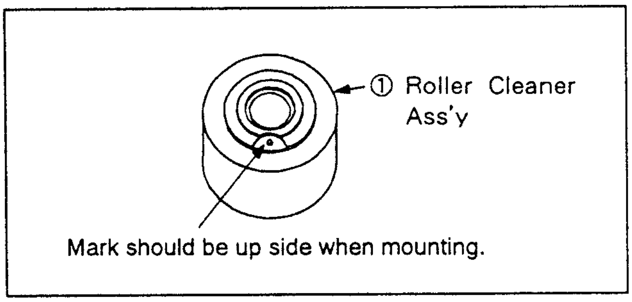

① Roller Cleaner Ass'y
Mark should be up side when mounting.

Fig. 5-13-2

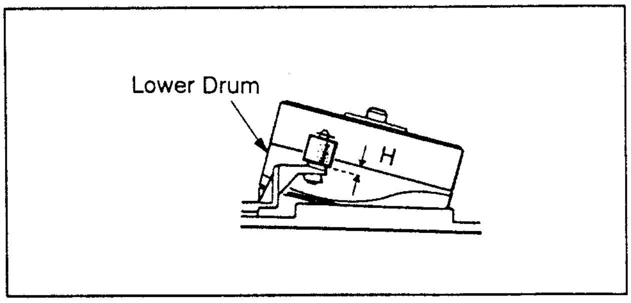

Lower Drum
H

Fig. 5-13-3

# SECTION 6
# MECHANISM ADJUSTMENTS

## 6-1. OPERATING THE MECHANISM WITH NO CASSETTE INSERTED (See Fig. 6-1-1.)

1) Attach black vinyl tape to the T. END and T. TOP sensors to prevent light from entering.
2) Push the TRAY LOCK LEVER in the direction of the arrow to maintain the unlocked condition. Release the lever just before the TRAY starts moving down.
3) In this condition, operation is possible in every mode. However, the following procedures are necessary to operate the unit in the REC, REW and R-SEARCH modes.

| | |
|---|---|
| REC mode : | Push the SAFETY SW LEVER to turn the SAFETY SWITCH (Erasure Prevention Switch) ON, then press the REC button. If the SAFETY SWITCH is not turned ON, the unit will enter the EJECT mode. |
| REW/R-SEARCH : | After pressing the REW button, turn the TAKE-UP REEL ASS'Y by hand. Otherwise, the reel sensor will operate, setting the INITIAL mode after 2 to 3 seconds. |

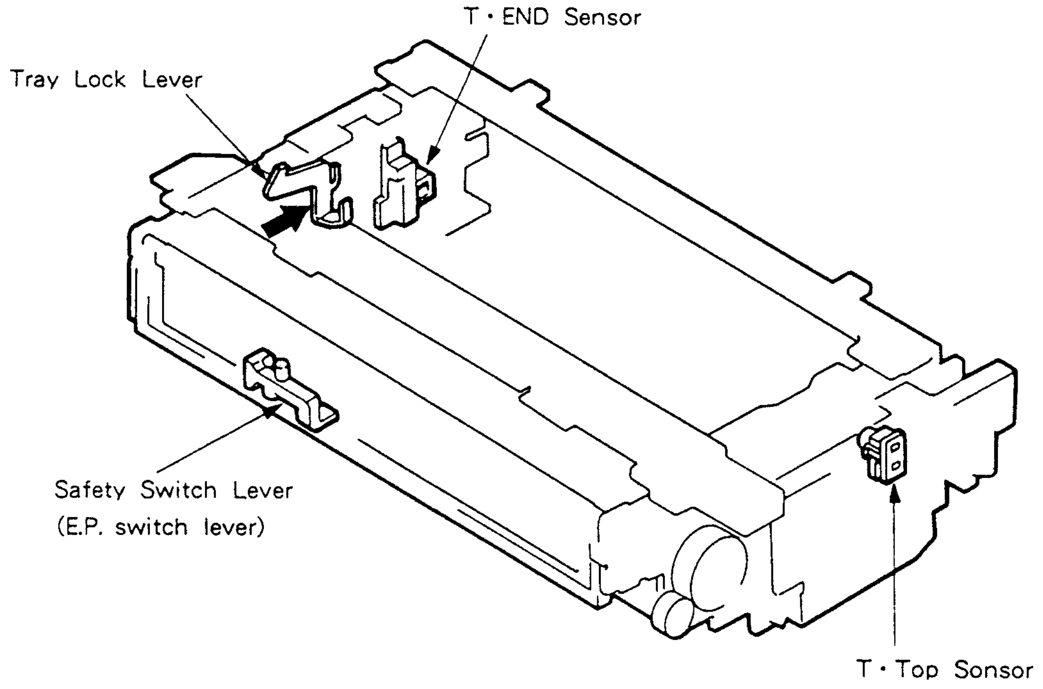


Fig. 6-1-1. Preparations for Adjustment

## 6-2. REEL TABLE HEIGHT ADJUSTMENT AND TORQUE CHECK

### 6-2-1. Reel Table Height (See Fig. 6-2-1.)

If the SUPPLY REEL ASS'Y or the TAKE-UP REEL ASS'Y is raplaced, it will be necessary to adjust the REEL TABLE height.

(1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1 of Service Manual.
(2) Attach the master plane (H-7099-279-H) and reel disc height jig (H-7099-038-H) in the direction of the arrows.
(3) Confirm that, when the gauge stops, the REEL TABLEs are not in contact with surface A of the plate and side of the REEL TABLEs are in contact with surface B.
(4) If the REEL TABLE is in contact with surface A, remove a spacer and check again.
(5) If the REEL TABLE is not in contact with surface B, add a spacer and check again.
(6) Remove the master plane.
(7) Set the EJECT mode with the mode selector.
(8) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1 of Service Manual.

Note:

- Adjust the reel table height by adding or removing spacers(0.13t, 0.25t, 0.3t, 0.4t and 0.5t)as appropriate so that the height meets the specifications. Use the same method for both the TAKE-UP REEL TABLE and the SUPPLY REEL TABLE.
  (The 0.5t washer is included as the standard washer for the SUPPLY REEL ASS'Y. The 0.4t washer is included as the standard washer for the TAKE-UP REEL ASS'Y.)
- If the height of the reel table is not within the specified value, the tape edge might be damaged as a result, or the tape path adjustment might not be possible to make.

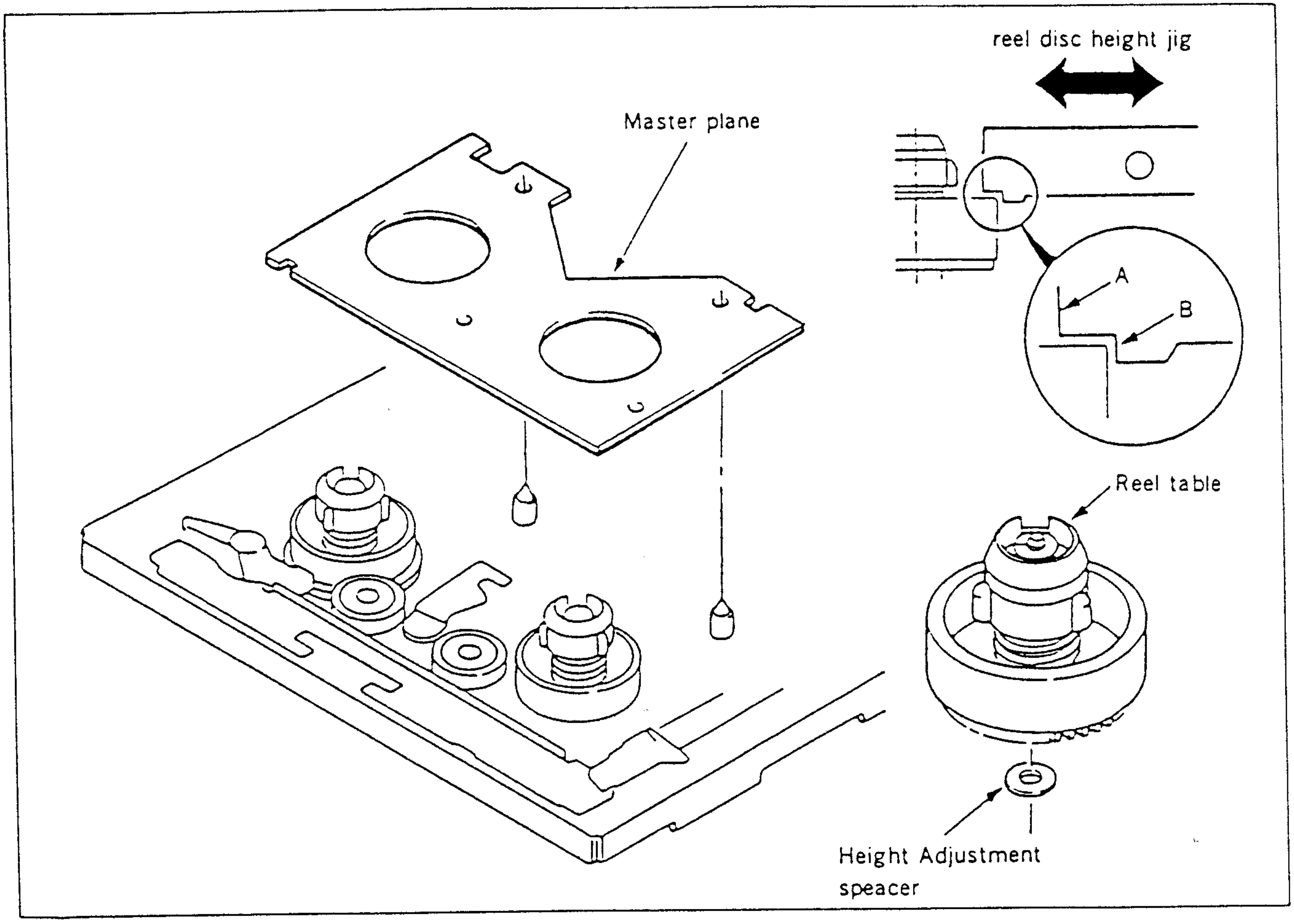


Fig. 6-2-1 . Reel Table Height Adjustment

**6-2-2. Torque Check (See Fig. 6-2-2.)**

1) Set the unit to operating condition without a cassette inserted as instructed in 6-1.
2) Measure the SUPPLY REEL TABLE torque in the REW mode, and confirm that it is 750gcm or more. Perform this measurement keeping the torque gauge in a fixed position with your hand (locked torque).
3) Measure the TAKE-UP REEL TABLE torque in the F.FWD mode, and confirm that it is 600gcm or more (locked torque).
4) Measure the TAKE-UP REEL TABLE torque in the playback mode (SP tape speed), and confirm that it is within 80 through 140gcm (locked torque).
5) Measure the SUPPLY REEL TABLE torque in the REV (F-SEARCH) mode, and confirm that it is within 150 through 240 gcm (locked torque).
6) After confirming that torque readings are within the specifications for each mode, check the following :
   ⓐ Dirt on the capstan motor and the REEL PULLEY groove.
   ⓑ Deterioration of the REEL DRIVE BELT.
   ⓒ Deterioration of the FRICTION GEAR ASS'Y felt (torque during playback).
   ⓓ Wear and damage of the COMPL CLUTCH MECHANISM and the reel drive system gears.

**Note1** : Items ⓑ, ⓒ and ⓓ require replacement if found defective.

**Note2** : The measured value of torque during FF and REW represents the value 2 seconds after starting.

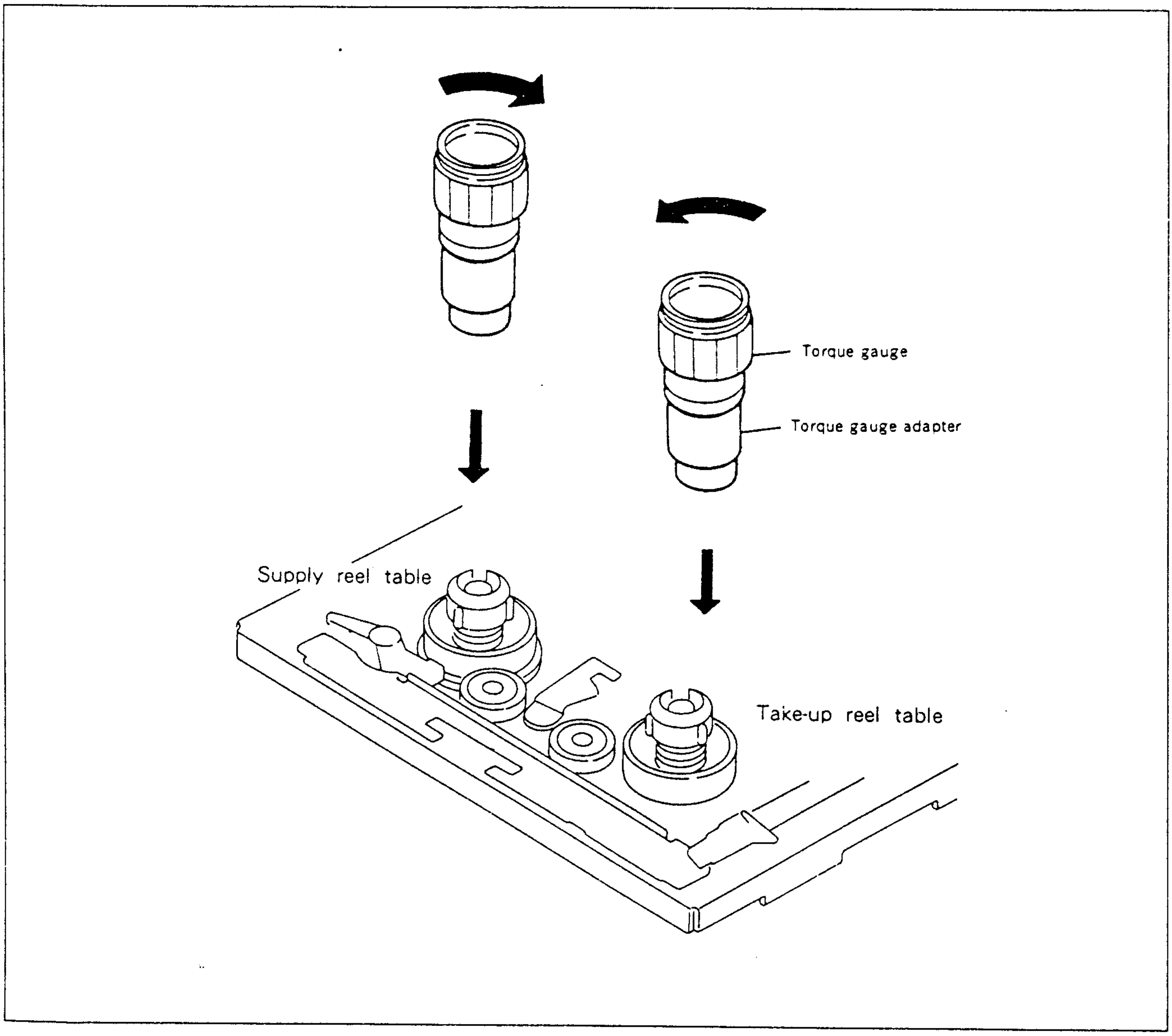


Fig. 6-2-2 Checking REW/FF/PLAY Torque

## 6-3. TENSION POLE (BACK TENSION GUIDE) POSITION ADJUSTMENT AND BACK TENSION TORQUE CHECK

### 6-3-1. Tension Pole (Back Tension Guide) Position Adjustment (See Fig. 6-3-1.)

1) Remove the COMPL CASSETTE MECHANISM as instructed in 5-2-1 of Service Manual.
2) Set the PLAY mode with the mode selector (VHJ-0050)
3) Confirm that the space between the end of chassis and the Tension arm is from 4mm to 6mm.
4) In case the tension pole is not withim 4-6mm, adjust it by loosening the screw ④ a little and changing the mounting position of the BAND HOLDER ⑤ in the direction of the arrow Ⓐ.
5) Set the EJECT mode with the mode selector.
6) Mount the COMPL CASSETTE MECHANISM as instructed in 5-2-1 of Service Manual.
7) Confirm that back tension torque is within 42± 5gcm, as instructed in 6-3-2 below.

### 6-3-2. Back Tension Torque Chack (See Fig. 6-3-1.)

1) Attach the cassette torquemeter (VHJ-0016) and set the PLAY mode.
2) Confirm that back tension torque is within 50 ± 10gcm.
3) In case back tension torque dose not meet the above specification, proceed as follows:

ⓐ Clean the portion where the brake band (BAND HOLDER ASS'Y) ⑦ of the SUPPLY REEL ASS'Y ⑥ makes contact.

ⓑ Confirm that the brake band of the BAND HOLDER ASS'Y ⑦ does not make wear and that it is clean. If wear or dirt is found, replace the band holder assembly ⑦ as instructed in 5-7-3 of Service Manual.

ⓒ Raplace the TENSION LEVER ASS'Y SPRING COIL ⑧.

Note: Always follow procedures in 6-3-1. Tension Pole Position Adjustment after performing ⓐ, ⓑ and ⓒ.

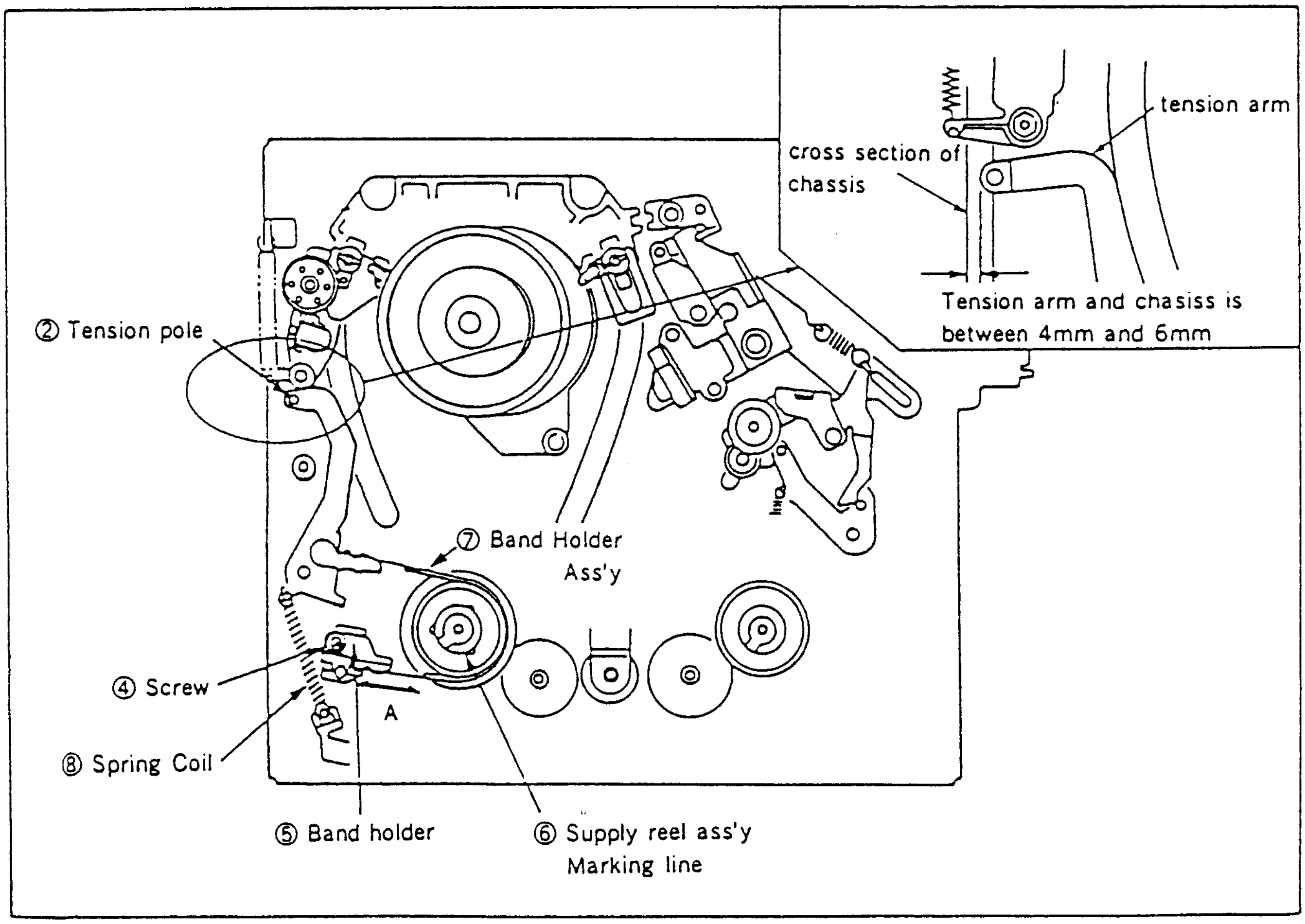

tension arm
cross section of chassis
Tension arm and chasiss is between 4mm and 6mm
② Tension pole
⑦ Band Holder Ass'y
④ Screw
A
⑧ Spring Coil
⑤ Band holder
⑥ Supply reel ass'y Marking line

Fig. 6-3-1. Tension Pole Positioning Adjustment

## 6-4. TAPE PATH ADJUSTMENT

The tape path mechanism is precisely adjusted at the factory. Normally no readjustment is required, but checking and/or adjustment is necessary when parts of the tape path mechanism among those shown in the figure below (See Fig. 6-4-1.) have been removed or replaced after a long period of use.

This operation consists of adjusting the various guides so that the tape drawn out from the supply reel runs smoothly along the DRUM (CYLINDER) lead surface. A way of grasping the tape path condition by electronic means is monitoring the video head output envelope waveform with an oscilloscope. However, the fact that visual observation is essential in order to know whether the tape is running through the various guides in a smooth and natural way should be kept in mind when checking and adjusting.

Also remember that the position of tape guides is not greatly affected by the replacement of the UPPER DRUM (UPPER CYLINDER) or the COMPL DRUM (COMPL CYLINDER), provided that it is correctly performed, and that only the replaced parts should be adjusted after replacing a tape guide or COMPL HEAD BRACKET, since the position of the other tape guides shall not change considerably.

### 6-4-1. Preparations for Adjustment

(1) Clean the tape transport surfaces (See Fig. 6-4-1.).

(2) Connect the oscilloscope. Connect the channel 1 probe to the envelope waveform test point, and the channel 2 probe to the SW30 (RF SW P) test point. During adjustment, apply a trigger to the low side of the SW30 (RF SW P) in order to monitor the waveform output from channel 1 of the video head.

**Note** : Since oscilloscope connection points differ according to the model, refer to the "Test Point for Tape Path Adjustment" allocation figure in the electric circuit adjustment section of the service manual book.

(3) Use a dentist's mirror for visual observation of tape path condition.

(4) Use an eccentric driver ( VHJ - 0003 ) for adjustment of the guide rollers.

(5) When adjusting height of the fixed guide, guide rollers or COMPL head bracket, turn the special nut or the upper flange clockwise to push the tape downward, and counterclockwise to make the tape rise up.

(6) Do not use the damaged cassette tapes for tape path adjustment.

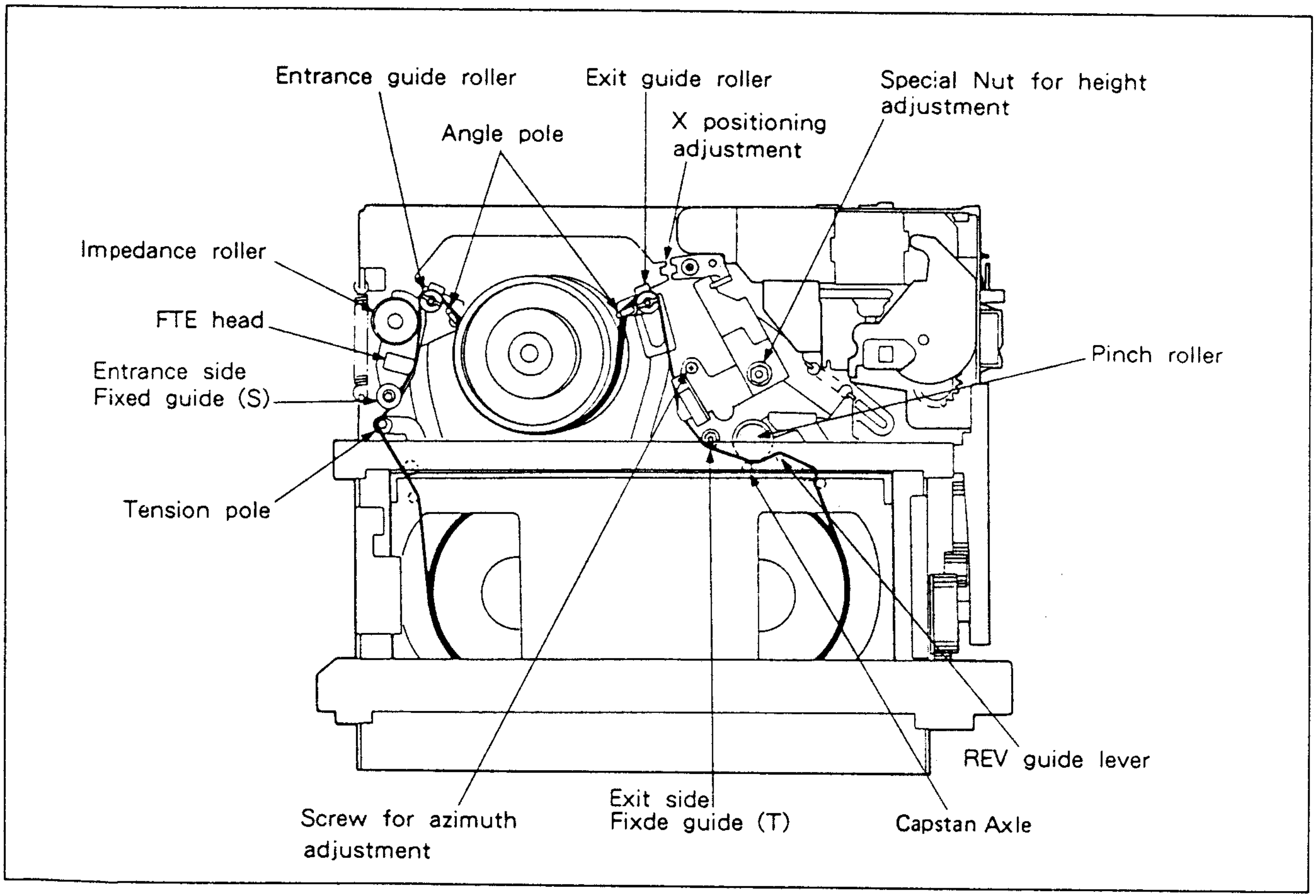

Entrance guide roller
Exit guide roller
Special Nut for height adjustment
Angle pole
X positioning adjustment
Impedance roller
FTE head
Entrance side Fixed guide (S)
Pinch roller
Tension pole
REV guide lever
Screw for azimuth adjustment
Exit side Fixde guide (T)
Capstan Axle

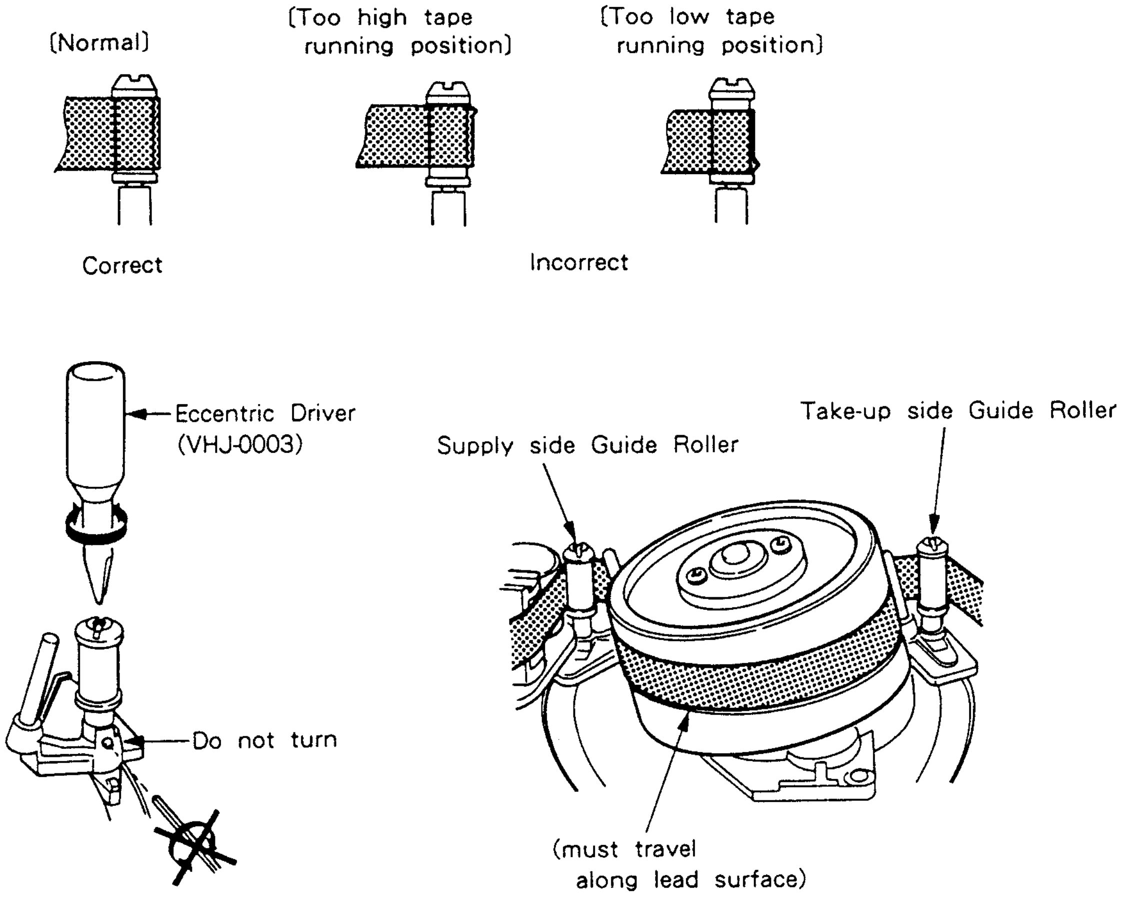
Fig. 6-4-1. Preparation for Adjustment

### 6-4-2. Adjustment by Visual Observation after Guide Roller, COMPL Head Bracket Replacement

Perform this adjustment after removing or replacing any of the above parts. Only for the replaced or removed parts, play back an alignment tape (VHJ-0009) beforehand and adjust height by visual observation.

(1) Guide Rollers (See Fig. 6-4-3.)
The tape should not be curled by the guide roller upper and lower flanges. It should also run smoothly, without moving up and down on the DRUM (CYLINDER) lead surface.

**Note :** An excessive guide roller pressure may cause tape damage.



(Normal)
(Too high tape running position)
(Too low tape running position)
Correct
Incorrect
Eccentric Driver (VHJ-0003)
Do not turn
Supply side Guide Roller
Take-up side Guide Roller
(must travel along lead surface)

Fig. 6-4-2. (2) Pre-set for Guide Roller

(2) COMPL Head Bracket (ACE Head) (See Fig. 6-4-3.)

Adjust the special nut so that the tape edge runs between the audio head upper end and the control head lower end. Gaps A and B should be of about the same width. Since at this point it is only required that the control signal is picked up and the servo circuit works normally, no adjusting screws except the COMPL head bracket special nut should be touched.

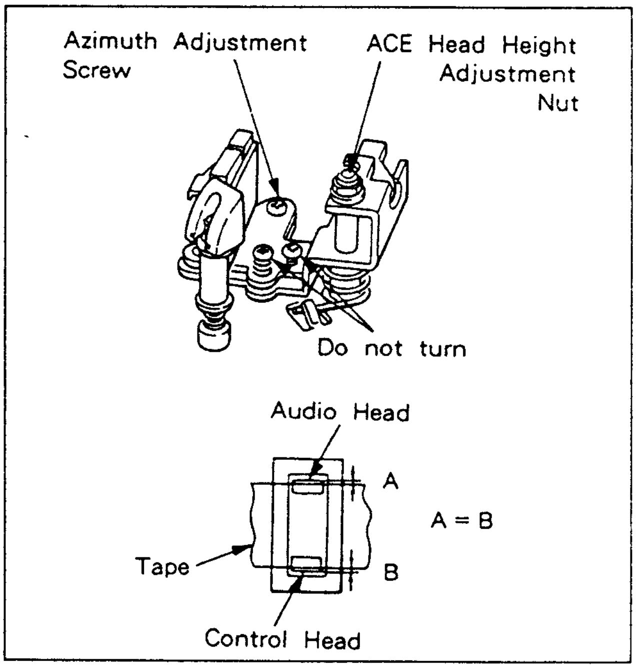

Azimuth Adjustment Screw
ACE Head Height Adjustment Nut
Do not turn
Audio Head
A
A = B
Tape
B
Control Head

Fig. 6-4-3. (3) Pre-set for Compl Head Bracket

### 6-4-3. Guide Roller Adjustment (See Fig. 6-4-4.)

1) Play back the alignment tape (VHJ-0009), press the tracking control key and adjust the envelope waveform to the maximum level.
2) Loosen the entrance and exit guide rollers by rotating them counterclockwise, then rotate them clockwise alternately until they are fastened and a flat video output waveform is obtained.
3) Confirm that the envelope waveform is not deformed, and check visually that no curling occurs at the guide roller upper and lower flanges.
4) Press the tracking control key and set the envelope waveform level to approx. 50% of the maximum. In this condition, confirm whether the envelope waveform is flat. It will not, showing valleys or peaks at the first half (entrance) or second half (exit), if the guide roller pressure is excessive or insufficient.
In case there is unevenness in the first half (entrance), adjust the entrance side guide roller. If the second half (exit) shows trouble, adjust finely the exit side guide roller.

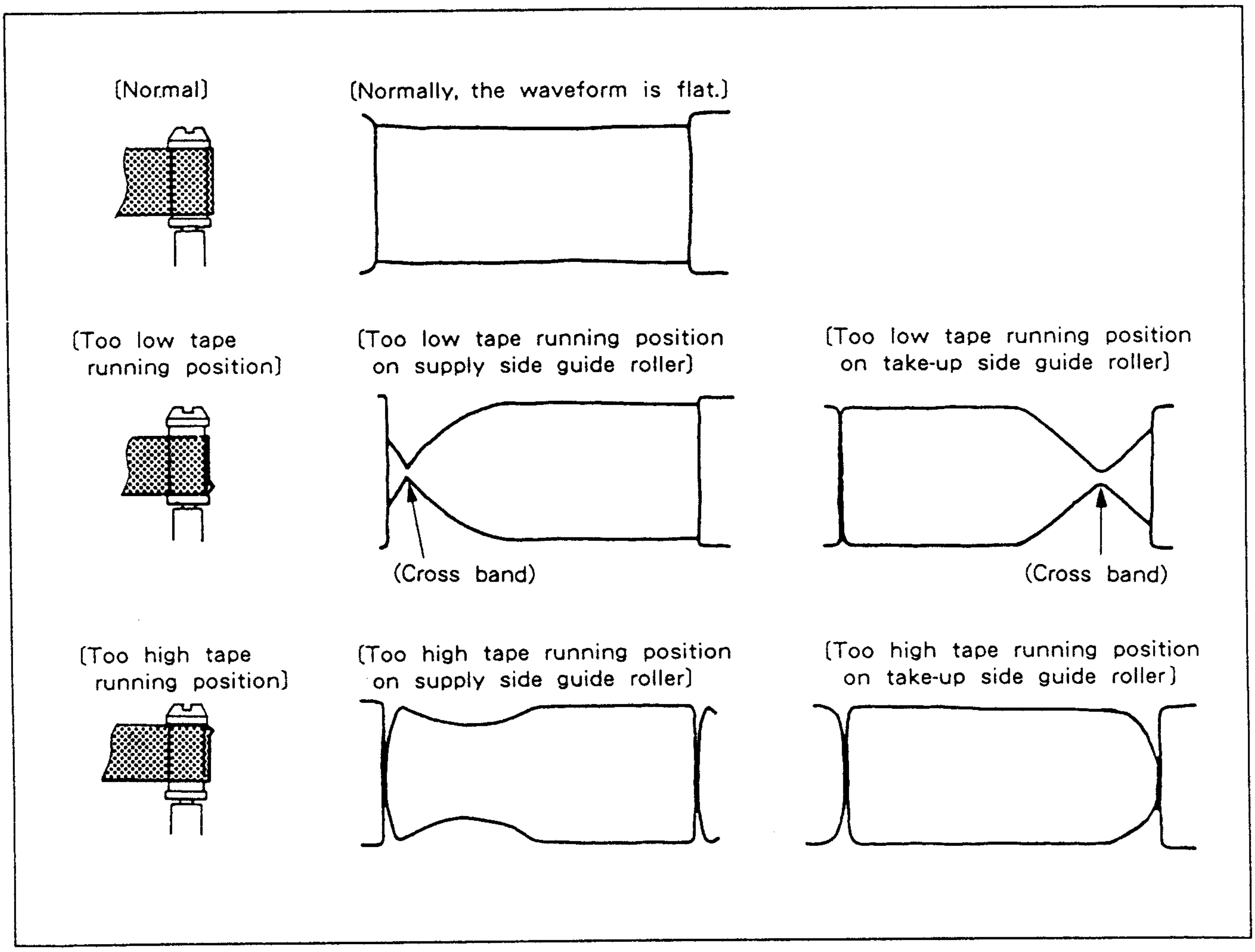

[Normal]
[Normally, the waveform is flat.]
[Too low tape running position]
[Too low tape running position on supply side guide roller]
[Too low tape running position on take-up side guide roller]
(Cross band)
(Cross band)
[Too high tape running position]
[Too high tape running position on supply side guide roller]
[Too high tape running position on take-up side guide roller]

Fig. 6-4-4. Guide Roller Adjustment

### 6-4-4. COMPL Head Bracket (ACE Head) Adjustment

(1) Height Adjustment and Azimuth Adjustment (See Fig. 6-4-5.)

1) Load the alignment tape (VHJ-0009) and set the PLAY mode.
2) Monitor the audio output waveform with the oscilloscope.
3) Rotate the azimuth adjustment screw until the audio output waveform amplitude is maximum.
4) After loosening the ACE head height adjustment special nut, rotate it slowly clockwise until amplitude of the audio output waveform is maximum, then adjust it finely clockwise to the point just before the said waveform amplitude begins to decrease.
5) Rotate the azimuth adjustment screw until amplitude of the audio output waveform is maximum.
6) Confirm that the audio output waveform amplitude does not fluctuate.

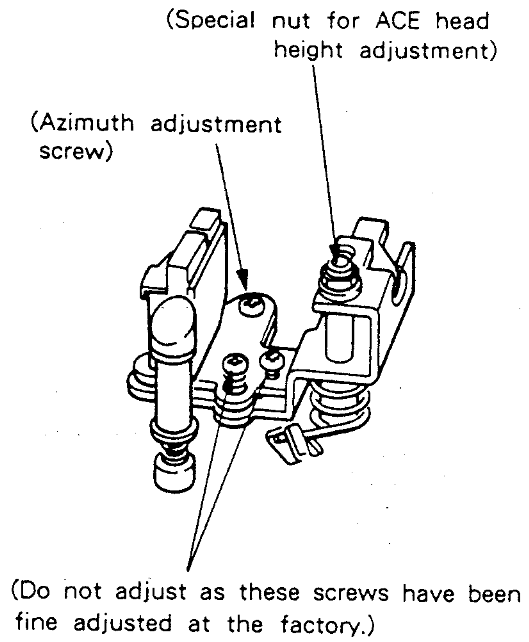

(Special nut for ACE head height adjustment)
(Azimuth adjustment screw)
(Do not adjust as these screws have been fine adjusted at the factory.)

Fig. 6-4-5. Compl Head Bracket

(2) Tracking (X Value) Adjustment (See Fig. 6-4-6.)

1) Load the alignment tape (VHJ-0009) and set the PLAY mode.
2) Set tracking to the center position with the tracking control key (See Note below).
3) Rotate the stopper bracket fixing screw 180° counterclockwise.
4) Monitor the video head output envelope waveform with the oscilloscope.
5) Adjust the stopper bracket position so that amplitude of the envelope waveform becomes maximum at the tracking center and the envelope waveform amplitude changes by the same amount when shifting the tracking center by pressing the plus (+) and minus (−) tracking control keys.
6) Tighten the fixing screw.
7) (Model for LP mode tape speed capability)
Playback the alignment tape (VHJ-0052) and set the tracking to the center using a tracking control key.
Then confirm that the playback picture on screen is normal. If not, Make readjustment by referring to items 1) through 7). To readjust, playback VHJ-0009 and finely adjust the position of the stopper bracket within the range in which the amplitude of the envelope waveform can be held to a maximum.
8) Perform servo circuit PB PHASE (Switching position) adjustment.

**Note :** For models equipped with auto tracking, always set to the manual tracking mode before adjustment. To confirm the tracking center position, press the tracking keys (+, −) and observe the front panel clock display. It will read "T − : −" at the tracking center, "T − : , T −  − : " when keeping the minus (−) key pressed, and "T : −, T : −  −" when keeping the plus (+) key pressed. The time indication will be restored 2 to 3 seconds after the tracking keys are released.

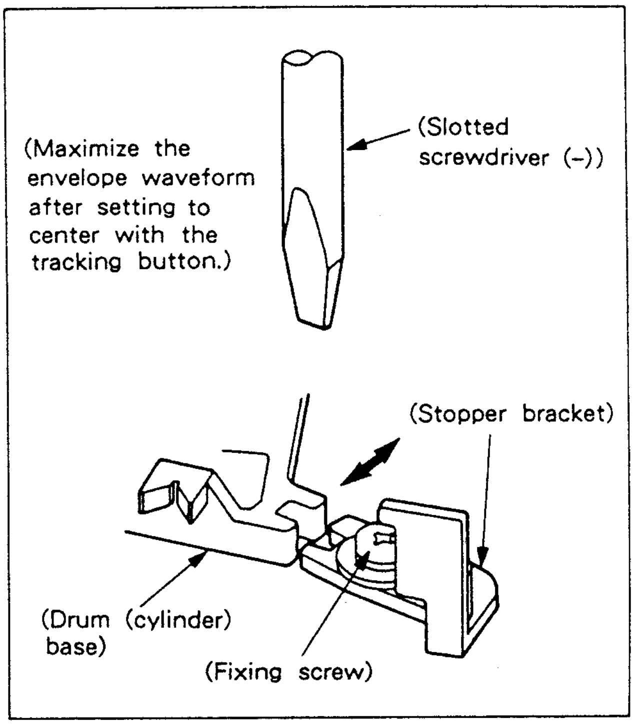

(Maximize the envelope waveform after setting to center with the tracking button.)
(Slotted screwdriver (−))
(Stopper bracket)
(Drum (cylinder) base)
(Fixing screw)

Fig. 6-4-6.

### 6-4-5. Checking after Adjustment

Tape running may show a slight change depending upon the type of the cassette tape (thick or thin tape), the start, middle, or end of cassette tape winding, etc. After performing the tape path adjustment with use of an alignment tape, be sure to check the following points. Incidentally, the alignment tape to be used should be E-180 or E-240 cassette should be a good one without any damage to it.

(1) Try to play back the alignment tape (VHJ-0009) and confirm that the envelope waveform rise immediately and that there is no fluctuation in the envelope waveform and the audio output waveform.

(2) Load a cassette tape E-180 and start recording operation in the standard mode. 1 kHz should be fed to the audio input terminal when recording. After recording, the following points should be checked.

1. When the recorded portion is played back, the envelope waveform rise immediately, and no fluctuation in the envelope waveform is observed. Also, no speed drop occurs during the first half period or the last half period. Further, check to be sure that no fluctuation. occurs in the audio waveform. Also confirm that neither the tape curling or derailing is caused on the upper or lower flange and the on the read side of the drum.
2. Confirm that no tape curling or derailing occurs in the upper or lower flange of each tape guide and the read side of the drum during each mode of operation, namely, FF, REW, F. SEARCH, and R. SEARCH.
3. Confirm that the envelope waveform rise immediately after changing the mode directly to the PLAY from each mode of FF, REW, F. SEARCH, R. SEARCH, or POWER OFF (INITIAL) and that no tape curling or derailing occurs in the upper or lower flange of the each tape guide and on the read side of the drum.

(3) Load a E-240 cassette tape and perform recording operation in the SP mode. 1 kHz should be fed to the audio input terminal when recording. Now, confirm that the envelope waveform rise immediately upon starting the playback of the recorded portion, and that neither fluctuation in the envelope waveform nor a speed drop occurs during the first half period or the last half period. Also confirm that no tape curling or derailing is caused in the upper or lower flange of each tape guide and on the drum lead surface.

(4) Perform recording for 60 seconds in the SP mode at the start of E-240 cassette winding. Play back the recorded portion and repeat the F.SEARCH ↔ R.SEARCH ten times, following which confirm that no damage is done to the tape edge. If any damage is found on the tape edge, a proper step must be taken as below depending upon the symptom obserbed.

1. If damage in the form of a sawtooth or a streak is found on the tape edge
   1) Check if a large amount of magnetic particles is adhered to the exit-side guide roller. If magnetic particles cannot be removed in spite of repeated cleaning, the guide roller must be replaced.
   2) Confirm if the tape is held too tightly by the exit-side guide roller, or if the last half of the envelope waveform is flat. If the type is found held too tightly, readjustment should be made by referring to 6-4-3.
   3) Recheck if the damage is still caused on the E-240 tape.
      If similar damage is still found on the tape, the exit-side guide roller should be loosened about 20° counterclockwise.
   4) Check once again that no fluctuation is caused in the envelope waveform or the audio waveform by loosening the exit-side guide roller. To do this, record and play back the E-240 cassette tape.

(5) Perform recording for 60 seconds in the SP mode at the near end of the E-240 cassette tape. Play back the recorded portion and repeat the F. SEARCH ↔ R. SEARCH ten times, following which a check should be made to see if damage is still done to the tape edge. If a damage in the form of a sawtooth or a streak is still occurred on the tape edge by the upper lounge of entrance side guide roller, proceed with the step given below.
   1) Check if a large amount of magnetic particles is adhered to the entrance-side guide roller. If the magnetic particles cannot be removed in spite of repeated cleaning, the guide roller must be replaced with new one.
   2) Confirm if the tape is held too tightly by the entrance-side guide roller, or if the first half of the envelope waveform is flat. If the tape is found held too tightly, readjustment should be made by referring to 6-4-3.
   3) Recheck if the damage is still caused on the E-240 tape.
      If the damage is still found on the tape, the entrance-sideguide roller should be loosened aboud 20° counterclockwise.
   4) Check once again that no fluctuation is caused in the envelop waveform or the audio waveform by looseving the entrance-side guide roller. To do this, record and play back the E-240 cassette tape.

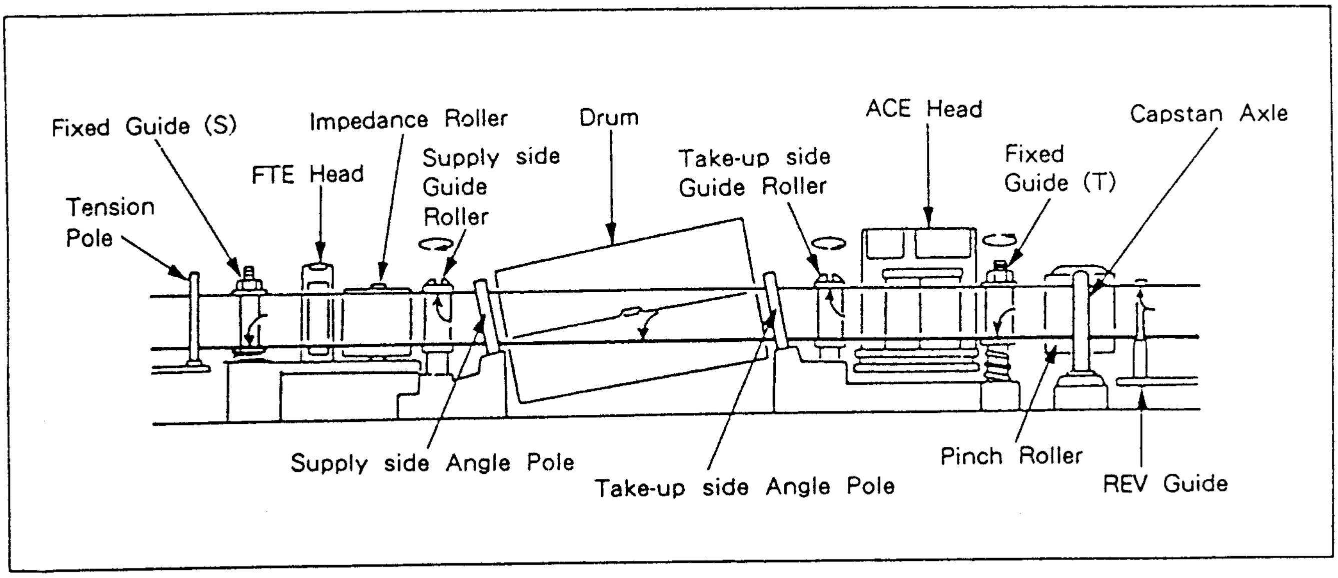


Fig. 6-4-7.

# SECTION 7

# ELECTRICAL ADJUSTMENTS

## 1. CIRCUIT BOARD LOCATIONS

### 1-1. MAIN BOARDS

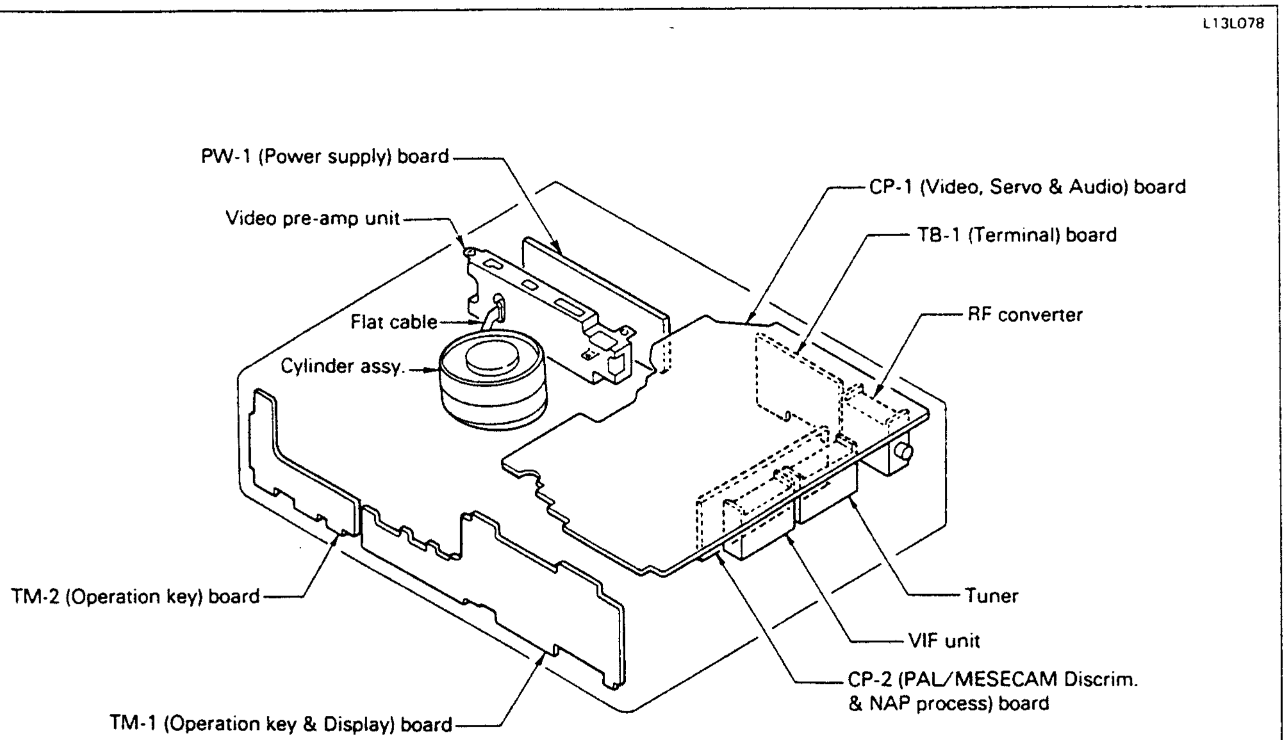

L13L078
PW-1 (Power supply) board
Video pre-amp unit
Flat cable
Cylinder assy.
CP-1 (Video, Servo & Audio) board
TB-1 (Terminal) board
RF converter
TM-2 (Operation key) board
Tuner
VIF unit
CP-2 (PAL/MESECAM Discrim. & NAP process) board
TM-1 (Operation key & Display) board

Fig. 1-1

### 1-2. LOCATION FOR TAPE PATH ADJUSTMENT

NOTE: Test point TP182 and TP183 for tape path adjustment is shown in figure below.

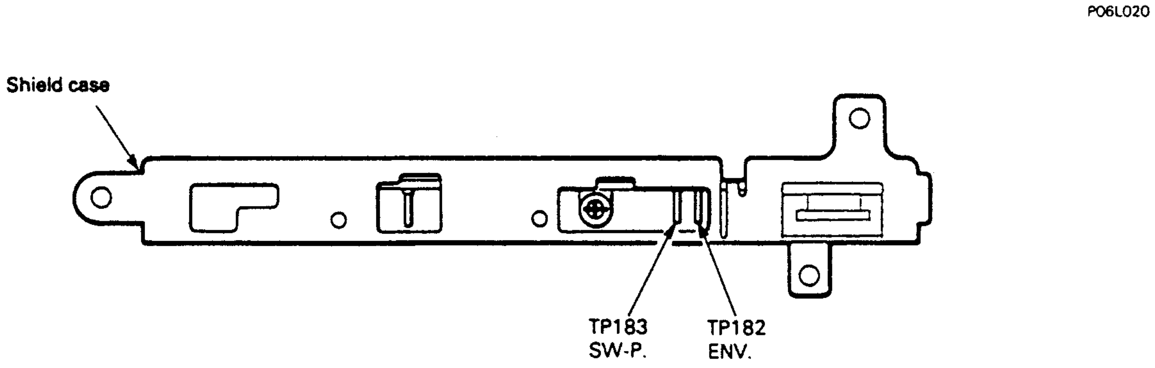

P06L020
Shield case
TP183
SW-P.
TP182
ENV.

Fig. 1-2 Video pre-amp unit

# 2. ELECTRICAL ADJUSTMENT

## 2-1. PREPARATION

### 2-1-1. EQUIPMENT

- Colour TV monitor
- PAL Colour-bar generator (with RF and LINE OUTPUT)
- Audio signal generator
- Oscilloscope (dual trace; frequency response: 10MHz or more; probe: 10:1)
- Frequency counter (countable to 10MHz or higher)
- Digital voltmeter
- AC voltmeter
- In/output probes
- Relay jig (VHJ-0065) 5-wire cable for Pre-amp unit

**[Alignment Tape (MH-2)] (H-7099-052-H) (PAL)**

In making the adjustment, an alignment tape for VHS(PAL). If a model is specified, be sure to use a tape of the model. If not either model of a tape can be used.

| | Time | Video signal | Audio signal |
|---|---|---|---|
| 1 | 10 minutes | Stair-step | 6 kHz |
| 2 | 5 minutes | – | 3 kHz |
| 3 | 10 minutes | Color bar | 1 kHz |
| 4 | 3 minutes | RF sweep | – |

### 2-1-2. SET-UP

Because the RF input signal is used for circuit adjustments, connect the colour-bar generator to the ANT IN terminal of the VCR. The RF input signal is processed by the tuner and IF circuit. It is improtant that the video output signal of the IF circuit satisfies the items shown in figure below. Connect the osçilloscope to the VIDEO OUTPUT terminal of the video circuit and terminate with a 75Ω load, and then check the video output signal.

- The amplitude of the sync signal should be approximately 0.3 Vp-p.
- The amplitude of the video signal should be approximately 0.7 Vp-p.
- While observing the oscilloscope or TV screen, make fine-tuning adjustments so that the colour burst amplitude is approximately 0.3 Vp-p.
- Check to be sure that there is no spike noise in the sync part of the horizontal sync signal.

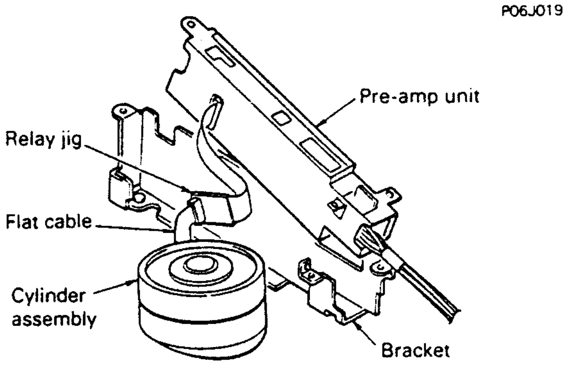


Fig. 2-1-1

NOTE: When repairing or adjusting the Pre-amp unit, be sure to make contact an end of the Shield case with Bracket of the Pre-amp unit to maintain the shield effect. If the Pre-amp unit does not contact, image can be obtained.

**CAUTION:** Be sure that the Relay jig does not have touch with video head or the upper cylinder assembly.

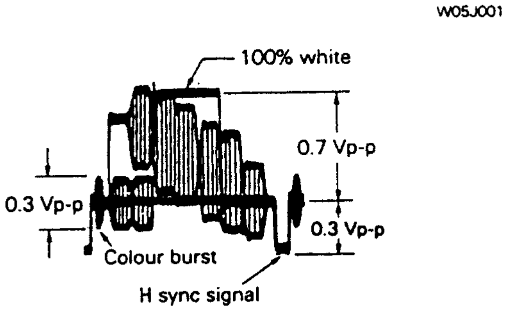
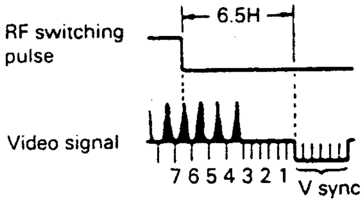


Fig. 2-1-2

## 2-2. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be carried out upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are carried out after these adjustments, follow the procedures again in Item 1 SWITCHING POSITION ADJ.
- Unless otherwise specified, all test point and adjustment location on the CP-1 board.

| No. | Item | Input | Mode | Point | Location | Remark |
|---|---|---|---|---|---|---|
| 1 | SWITCHING POSITION | Alignment cassette (MH-2) | PLAY | VIDEO OUTPUT TP101<br>RF SW pulse TP183 (Video pre-amp unit) | VR351 | W25S002<br><br> 6.5H<br>RF switching pulse<br>Video signal<br>7 6 5 4 3 2 1<br>V sync<br>1. Press the tracking control buttons (+) and (-) simultaneously to the tracking center position: (indicator panel displayed "T —:— ").<br>2. Set the COLOR SYSTEM switch to PAL position, and play back the Alignment cassette.<br>3. Trigger at the falling edge of the RF SW pulse, and adjust VR351 so that the front edge of the V sync signal comes 6.5 ± 0.2H later than falling edge of the RF SW pluse.<br>4. Confirm that the phase difference between the switching positions of CH-1 and CH-2 is within 0.5H. |

P12S054

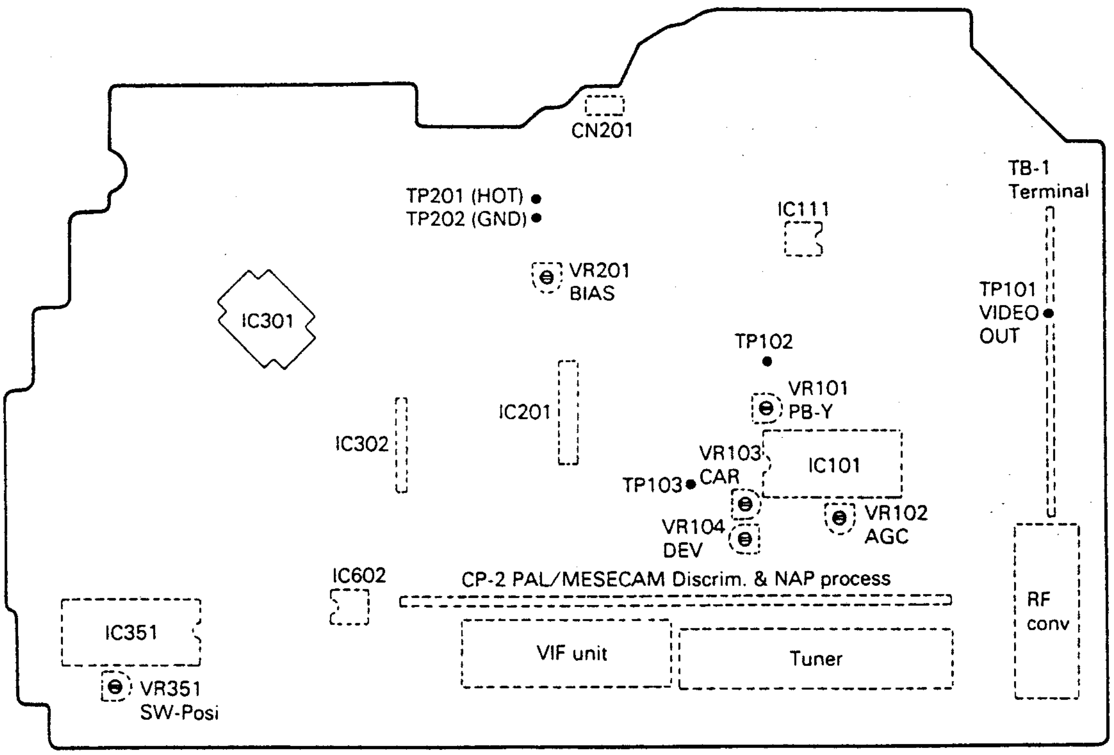
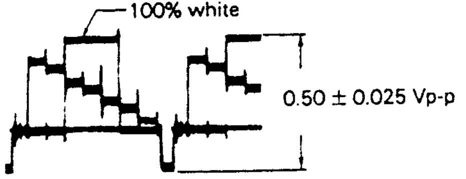
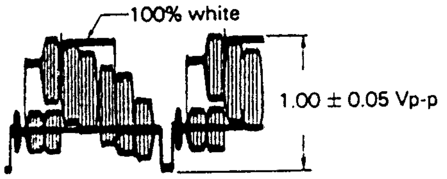
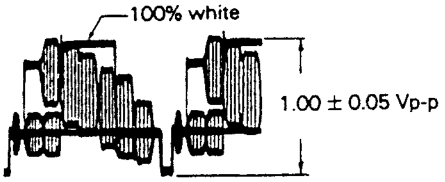
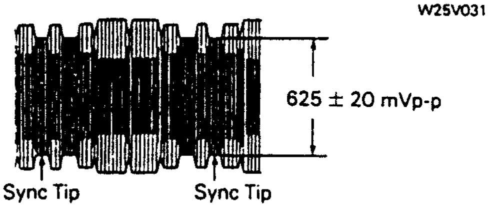

CN201
TP201 (HOT)
TP202 (GND)
IC111
TB-1 Terminal
VR201 BIAS
IC301
TP101 VIDEO OUT
TP102
VR101 PB-Y
IC201
IC302
VR103 CAR
IC101
TP103
VR104 DEV
VR102 AGC
IC602
CP-2 PAL/MESECAM Discrim. & NAP process
RF conv
IC351
VIF unit
Tuner
VR351 SW-Posi

Fig. 2-2-1 CP-1 board (Foil side view)

## 2-3. VIDEO CIRCUIT ADJUSTMENT

- Use the Relay jig mentioned in the 2-1. PREPARATION to provide simple adjustment of the Video Pre-amp unit.
- Before these adjustment set the COLOR SYSTEM switch to PAL position.
- Unless otherwise specified, all test point and adjustment location on the CP-1 board.

| No. | Item | Input | Mode | Point | Location | Remark |
|---|---|---|---|---|---|---|
| 1 | AGC LEVEL | Colour bar (100% white level) from Colour bar generator | E-E | TP102 | VR102 | W25V030<br> <br>1. Terminate VIDEO OUTPUT terminal with a 75 ohms.<br>2. Adjust VR102 so that the level is 0.50 ± 0.025 Vp-p. |
| 2 | PB-Y LEVEL | Alignment cassette (MH-2) | PLAY | VIDEO OUTPUT TP101 | VR101 | W25V001<br> <br>1. Terminate VIDEO OUTPUT terminal with a 75 ohms.<br>2. Adjust VR101 so that the level is 1.00 ± 0.05 Vp-p. |
| 3 | CARRIER SET | Colour bar (100% white level) from Colour bar generator<br>↓<br>No-signal | REC | TP103 | VR103 | 1. Input the PAL colour bar signal to VIDEO INPUT terminal.<br>2. Press the INPUT SELECT button to the "AU" indicator lights and place in the REC mode.<br>3. After removing the first colour bar signal input from the video input terminal, immediately adjust VR103 so that the frequency becomes 3.83 ± 0.05 MHz. |
| 4 | DEVIATION | Colour bar (100% white level) from Colour bar generator | REC (Adjustment)<br>↓<br>PLAY (Check) | VIDEO OUTPUT TP101 | VR104 | W25W001<br> <br>1. Terminate VIDEO OUTPUT terminal with a 75 ohms.<br>2. Insert the blank tape to the VCR and record colour bar signal.<br>3. Playback the recorded part, and check that the level is 1.00 ± 0.05 Vp-p.<br>4. If the adjustment value is not satisfactory, adjust VR104 and repeat step 3. |

| No. | Item | Input | Mode | Point | Location | Remark |
|---|---|---|---|---|---|---|
| 5 | Y/C REC CURRENT | Colour bar from Colour bar generator | REC | TP181 (HOT) Shield case (GND) (Video pre-amp unit) | VR182 (Video pre-amp unit) |  <br>1. Connect the ground of the oscilloscope to the Shield case of Video pre-amp.<br>2. Press the INPUT SELECT button to the "AU" indicator lights and place in the REC mode.<br>3. Adjust VR182 so that the luminance signal level at the sync tip is 625 ± 20 mVp-p. |

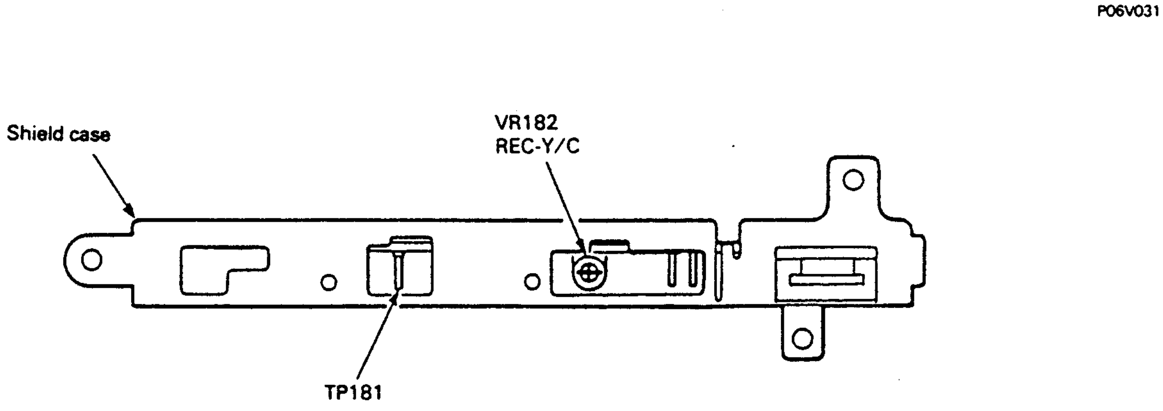


Fig. 2-3-1 Video pre-amp unit

## 2-4. AUDIO CIRCUIT ADJUSTMENT

- Unless otherwise specified, all test point and adjustment location on the CP-1 board.

| No. | Item | Input | Mode | Point | Location | Remark |
|---|---|---|---|---|---|---|
| 1 | BIAS LEVEL | No-signal | REC | TP201 (HOT)<br>TP202 (GND) | VR201 | 1. Press the INPUT SELECT button to the "AU" indicator lights and place in the REC mode without a signal.<br>2. Adjust VR201 so that the level is 23 mVrms.<br>3. Confirm that the bias frequency is 70 ± 5 KHz. |

## 2-5. TUNER IF CIRCUIT ADJUSTMENT

- There are two of the VIF unit's type and different with the model as shown in figure below.

| No. | Item | Input | Mode | Point | Location | Remark |
|---|---|---|---|---|---|---|
| 1 | RF AGC | TV broadcast | E-E | TV screen | VR611<br>(VIF unit) | 1. Receive the middle electrical field (60 dBμ ~ 80 dBμ) of the TV channel, and slowly turn VR611 from the point where snow-noise is present to the point where it just disappears from the monitor TV.<br>2. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel. |

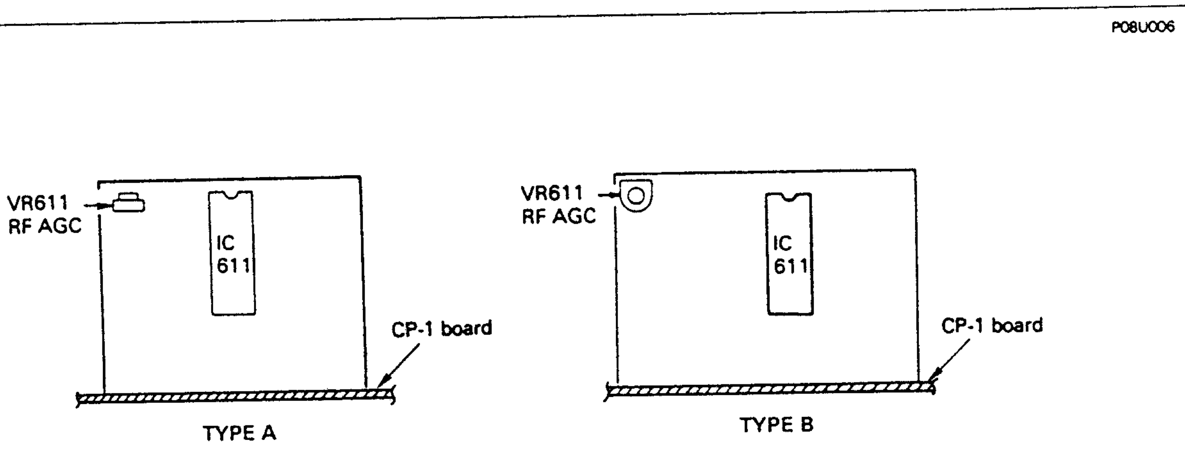


Fig. 2-5-1 VIF unit (Parts side view)

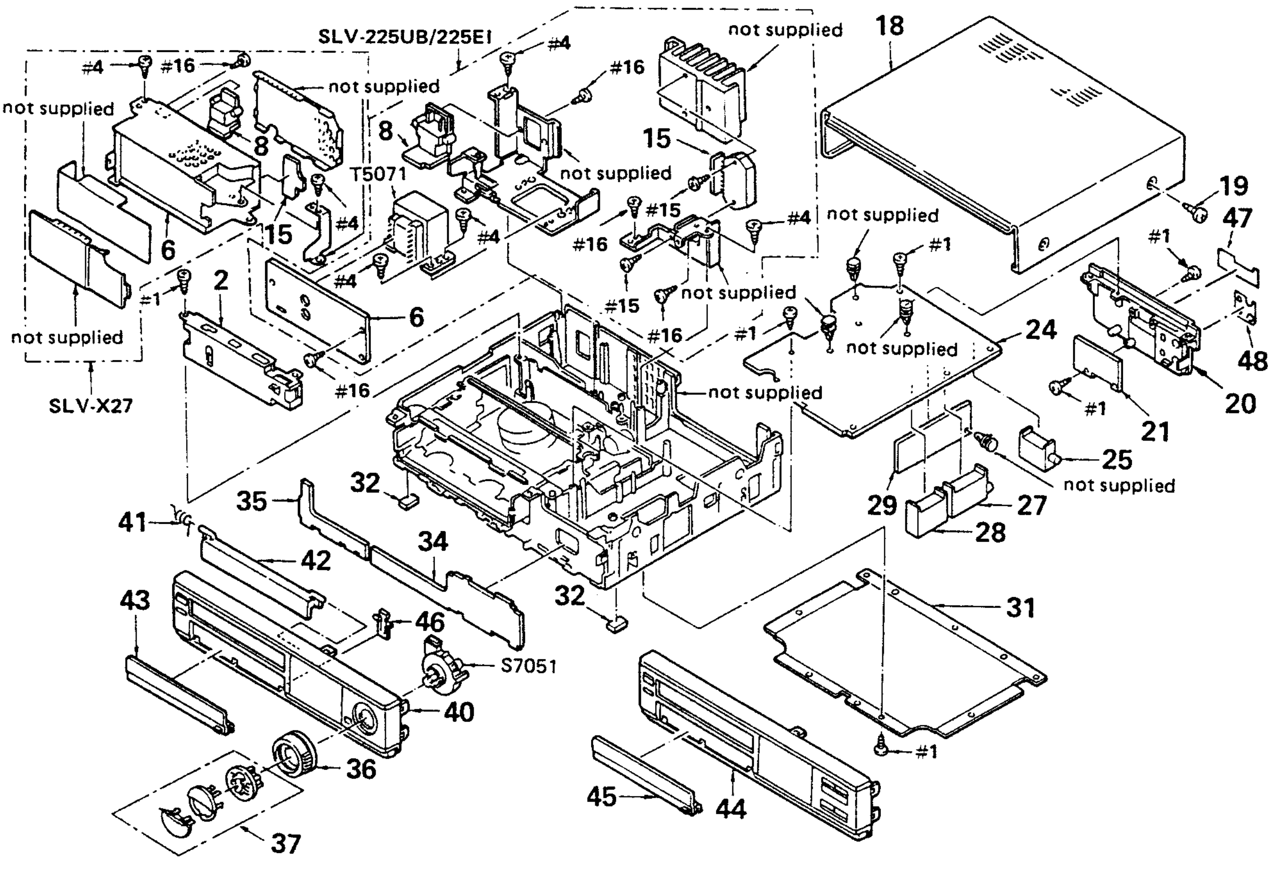
# SECTION 8
# EXPLODED VIEWS

**NOTE:**

- -XX,-X mean standardized parts, so they may have some difference from the original one.
- Color indication of Appearance Parts.
  Example:
  KNOB,BALANCE (WHITE) . . . (RED)
  ↑ Parts Color ↑ Cabinet's Color
- Items marked " ✱ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware ( # mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

## 8-1. CABINET & CHASSIS PARTS



SLV-225UB/225EI
#4
#16
not supplied
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15
6
T5071
2
#1
SLV-X27
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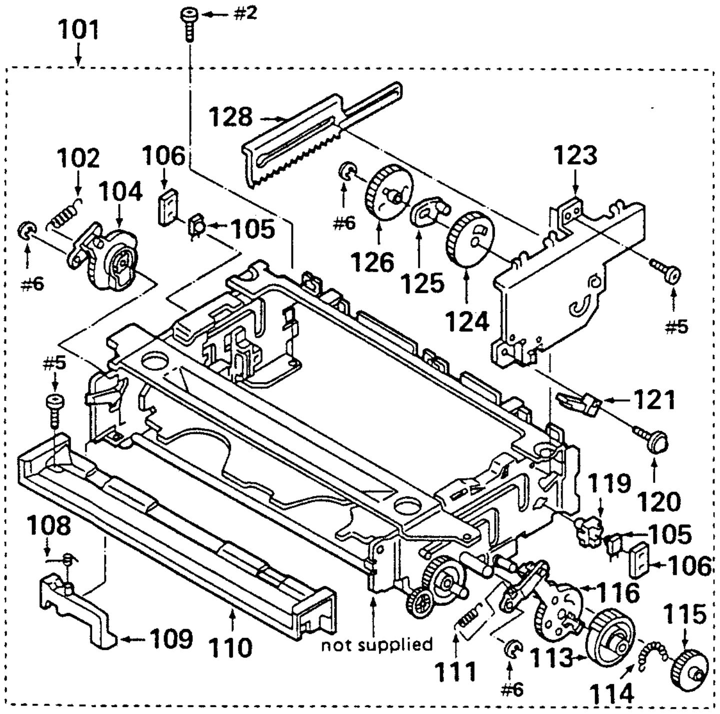
S7051

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 2 | A-6756-513-A | VP-1 BOARD, COMPLETE | |
| * 6 | A-6756-528-A | PW-1 BOARD, COMPLETE (SLV-X27) | |
| * 6 | A-6756-557-A | PW-1 BOARD, COMPLETE (SLV-225UB) | |
| * 6 | A-6756-656-A | PW-1 BOARD, COMPLETE (SLV-225EI) | |
| * 8 | A-6756-285-A | PW-3 BOARD, COMPLETE (SLV-X27) | |
| * 8 | A-6756-517-A | PW-3 BOARD, COMPLETE (SLV-225EI/225UB) | |
| * 15 | A-6756-516-A | PW-2 BOARD, COMPLETE (SLV-225EI/225UB) | |
| * 15 | A-6756-521-A | PW-2 BOARD, COMPLETE (SLV-X27) | |
| * 18 | 3-947-426-01 | COVER, TOP (SLV-X27) | |
| * 18 | 3-948-611-01 | COVER, TOP (SLV-225EI/225UB) | |
| 19 | 3-740-382-01 | +BTS-B S 4X12 | |
| 20 | 3-948-625-01 | BRACKET, TERMINAL (SLV-225UB) | |
| * 20 | 3-948-271-01 | BRACKET, TERMINAL (SLV-X27) | |
| 20 | 3-948-625-01 | BRACKET, TERMINAL (SLV-225EI) | |
| * 21 | A-6756-508-A | TB-1 BOARD, COMPLETE (SLV-225EI/225UB) | |
| * 21 | A-6756-525-A | TB-1 BOARD, COMPLETE (SLV-X27) | |
| * 24 | A-6756-522-A | CP-1 BOARD, COMPLETE (SLV-X27) | |
| * 24 | A-6756-550-A | CP-1 BOARD, COMPLETE (SLV-225UB) | |
| * 24 | A-6756-658-A | CP-1 BOARD, COMPLETE (SLV-225EI) | |
| 25 | 1-466-754-11 | RF MODULATOR (SLV-225UB) | |
| 25 | 1-466-258-11 | RF MODULATOR (SLV-X27) | |
| 25 | 1-466-754-11 | RF MODULATOR (SLV-225EI) | |
| 27 | 1-693-179-11 | TUNER PACK (SLV-225UB) | |
| 27 | 1-465-340-11 | TUNER PACK (SLV-X27) | |
| 27 | 1-465-352-11 | TUNER PACK (SLV-225EI) | |
| 28 | 1-466-753-11 | IF PACK (SLV-225UB) | |
| 28 | 1-466-257-11 | IF PACK (SLV-X27) | |
| 28 | 1-466-778-11 | IF PACK (SLV-225EI) | |
| * 29 | A-6756-510-A | CP-2 BOARD, COMPLETE (SLV-X27) | |
| * 29 | A-6756-554-A | CP-2 BOARD, COMPLETE (SLV-225EI/225UB) | |
| * 31 | 3-947-408-01 | COVER, BOTTOM | |
| * 32 | 3-942-661-01 | STAND, FELT | |
| * 34 | A-6756-526-A | TM-1 BOARD, COMPLETE (SLV-X27) | |
| * 34 | A-6756-558-A | TM-1 BOARD, COMPLETE (SLV-225UB) | |
| * 34 | A-6756-657-A | TM-1 BOARD, COMPLETE (SLV-225EI) | |
| * 35 | A-6756-519-A | TM-2 BOARD, COMPLETE (SLV-225EI/225UB) | |
| * 35 | A-6756-527-A | TM-2 BOARD, COMPLETE (SLV-X27) | |
| 36 | 3-944-572-01 | RING, SHUTTLE (SLV-225EI/225UB) | |
| 37 | X-3941-295-1 | BUTTON ASSY, FUNCTION (SLV-225EI/225UB) | |
| 40 | A-6704-625-A | CABINET ASSY, FRONT (SLV-225EI/225UB) | |
| 41 | 3-942-659-01 | SPRING (CASSETTE DOOR) | |
| 42 | 3-948-604-01 | DOOR, CASSETTE (SLV-225EI/225UB) | |
| 42 | 3-948-671-01 | DOOR, CASSETTE (SLV-X27) | |
| 43 | A-6704-626-A | DOOR ASSY, FRONT (SLV-225EI/225UB) | |
| 44 | A-6704-619-A | CABINET ASSY, FRONT (SLV-X27) | |
| 45 | A-6704-620-A | DOOR ASSY, FRONT (SLV-X27) | |
| 46 | 3-740-330-01 | LOCK | |
| * 47 | 3-948-679-01 | PLATE, BACK (SLV-X27) | |
| * 47 | 3-948-816-01 | PLATE, BACK (SLV-225EI/225UB) | |
| * 48 | 3-948-629-01 | PLATE, BACK (SLV-X27) | |
| 48 | 3-948-626-01 | PLATE, BACK (SLV-225EI/225UB) | |
| S7051 | 1-572-662-11 | SWITCH, ROTARY (PLAY/STOP/REW/FF) (SLV-225EI/225UB) | |
| ⚠T5071 | 1-450-989-11 | TRANSFORMER, POWER (SLV-225EI) | |
| ⚠T5071 | 1-697-017-11 | TRANSFORMER, POWER (SLV-225UB) | |

## 8-2. MECHANISM PARTS 1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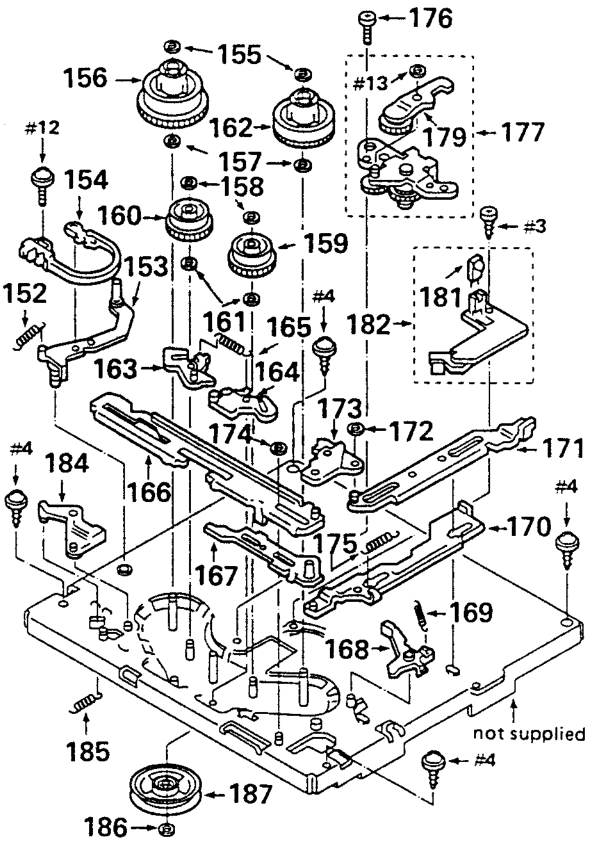
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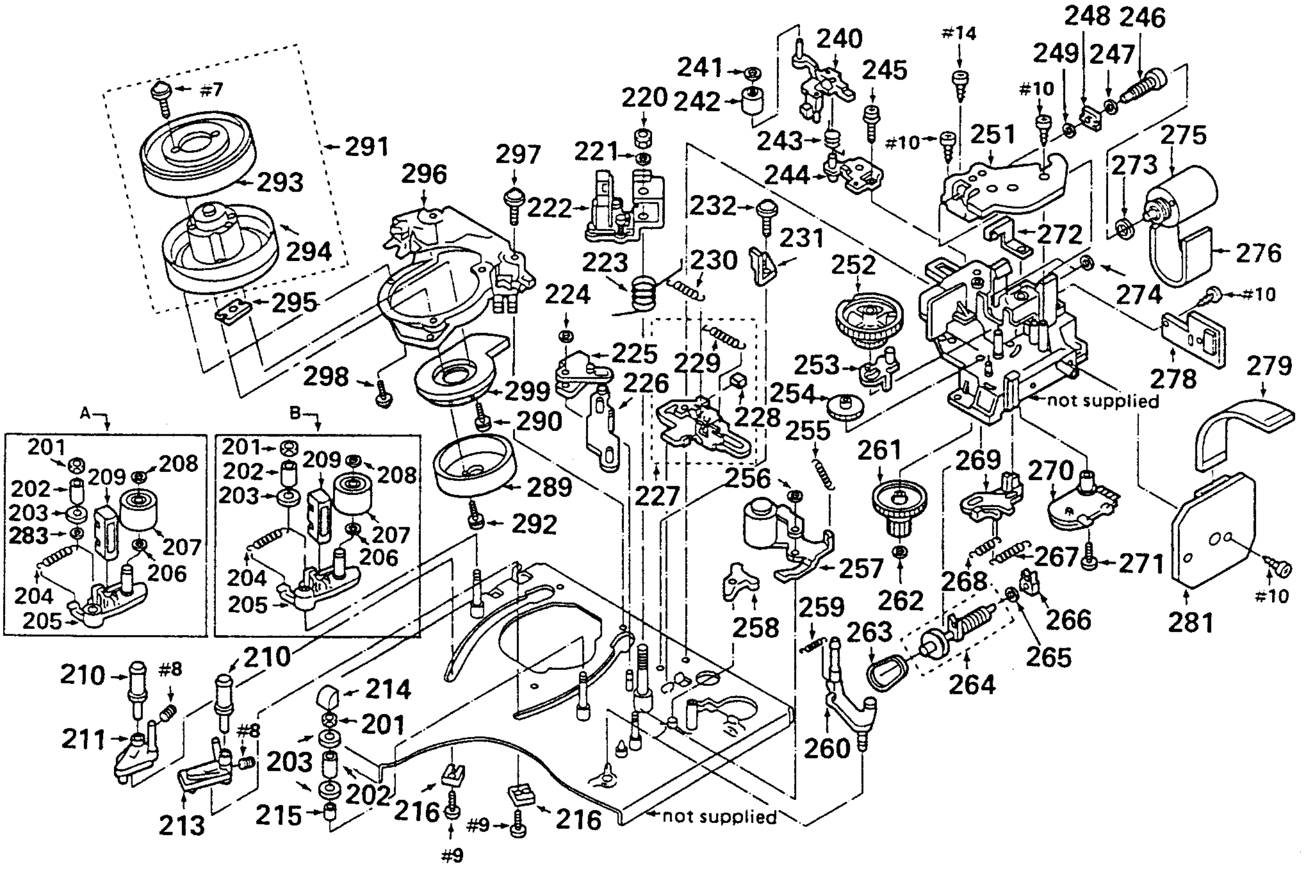
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | A-6773-733-A | MECHANICAL ASSY, CASSETTE | |
| 102 | 3-735-720-01 | SPRING | |
| 104 | 3-735-719-01 | LEVER (L) ASSY, GEAR | |
| 105 | 1-808-710-11 | PHOTO TRANSISTOR | |
| 106 | 3-735-734-01 | LID | |
| 108 | 3-942-688-01 | SPRING, SAFETY SWITCH | |
| 109 | 3-942-686-01 | LEVER, SAFETY SWITCH | |
| 110 | 3-735-716-01 | FRAME, LOWER | |
| 111 | 3-735-726-01 | SPRING | |
| 113 | 3-735-724-01 | GEAR, MAIN | |
| 114 | 3-735-725-01 | SPRING | |
| 115 | 3-735-728-01 | GEAR, IDLER | |
| 116 | 3-735-723-01 | GEAR ASSY, LEVER | |
| * 119 | 3-940-408-01 | HOLDER, TRANSISTOR | |
| 120 | 3-735-775-01 | SCREW (2X9), +PSW | |
| 121 | 3-740-345-01 | SPECIAL SWITCH | |
| 123 | 3-740-342-01 | BRACKET, GEAR | |
| 124 | 3-735-730-01 | GEAR, PINION | |
| 125 | 3-735-732-01 | LEVER ASSY, PINION | |
| 126 | 3-735-731-01 | GEAR, LOCK | |
| 128 | 3-740-344-01 | LOCK | |
| 152 | 3-735-654-01 | SPRING | |
| 153 | 3-740-352-01 | LEVER, TENSION | |
| 154 | 3-735-690-01 | HOLDER ASSY, BAND | |
| 155 | 3-735-755-01 | WASHER (DIA 2.6) | |
| 156 | 3-948-608-01 | REEL (ASSY), SUPPLY | |
| 157 | 3-735-754-01 | WASHER (DIA 3), ADJUSTMENT | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 158 | 3-741-401-01 | WASHER Y 2.1X6X0.25 | |
| 159 | 3-947-392-01 | GEAR, REEL TAKE-UP | |
| 160 | 3-948-609-01 | GEAR, SUPPLY REEL | |
| 161 | 3-735-750-01 | WASHER (DIA 2.6), SPECIAL | |
| 162 | 3-948-506-01 | REEL (TAKE-UP) (ASSY) | |
| 163 | 3-735-656-01 | BRAKE ASSY, S | |
| 164 | 3-735-657-01 | BRAKE ASSY, T | |
| 165 | 3-735-658-01 | SPRING | |
| * 166 | 3-735-661-01 | PLATE ASSY, SLIDE | |
| * 167 | 3-735-628-01 | BRAKE, SLIDE ACT | |
| 168 | 3-740-349-01 | ASSY, BRAKE SUB T | |
| 169 | 3-735-665-01 | SPRING | |
| * 170 | 3-735-626-01 | BRAKE (C) ASSY | |
| * 171 | 3-735-662-01 | PLATE ASSY, SLIDE | |
| 172 | 3-746-725-01 | WASHER, SPECIAL | |
| 173 | 3-735-663-01 | LEVER, CONTROL | |
| 174 | 3-735-761-01 | WASHER (DIA 2.6) | |
| 175 | 3-735-627-01 | SPRING | |
| 176 | 3-942-657-01 | SCREW (2.6X4), SPECIAL | |
| * 177 | A-6773-689-A | IDLER CLUTCH BOARD, COMPLETE | |
| 179 | 3-947-394-01 | IDLER (ASSY) | |
| 181 | 1-808-722-11 | DIODE LN59 | |
| * 182 | A-6756-374-A | MC-4 BOARD, COMPLETE | |
| 184 | 3-735-655-01 | BRAKE SUB, S | |
| 185 | 3-740-348-01 | SPRING | |
| 186 | 3-948-603-01 | WASHER, SPECIAL | |
| 187 | 3-735-652-01 | PULLEY | |

## 8-3. MECHANISM PARTS 2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not supplied
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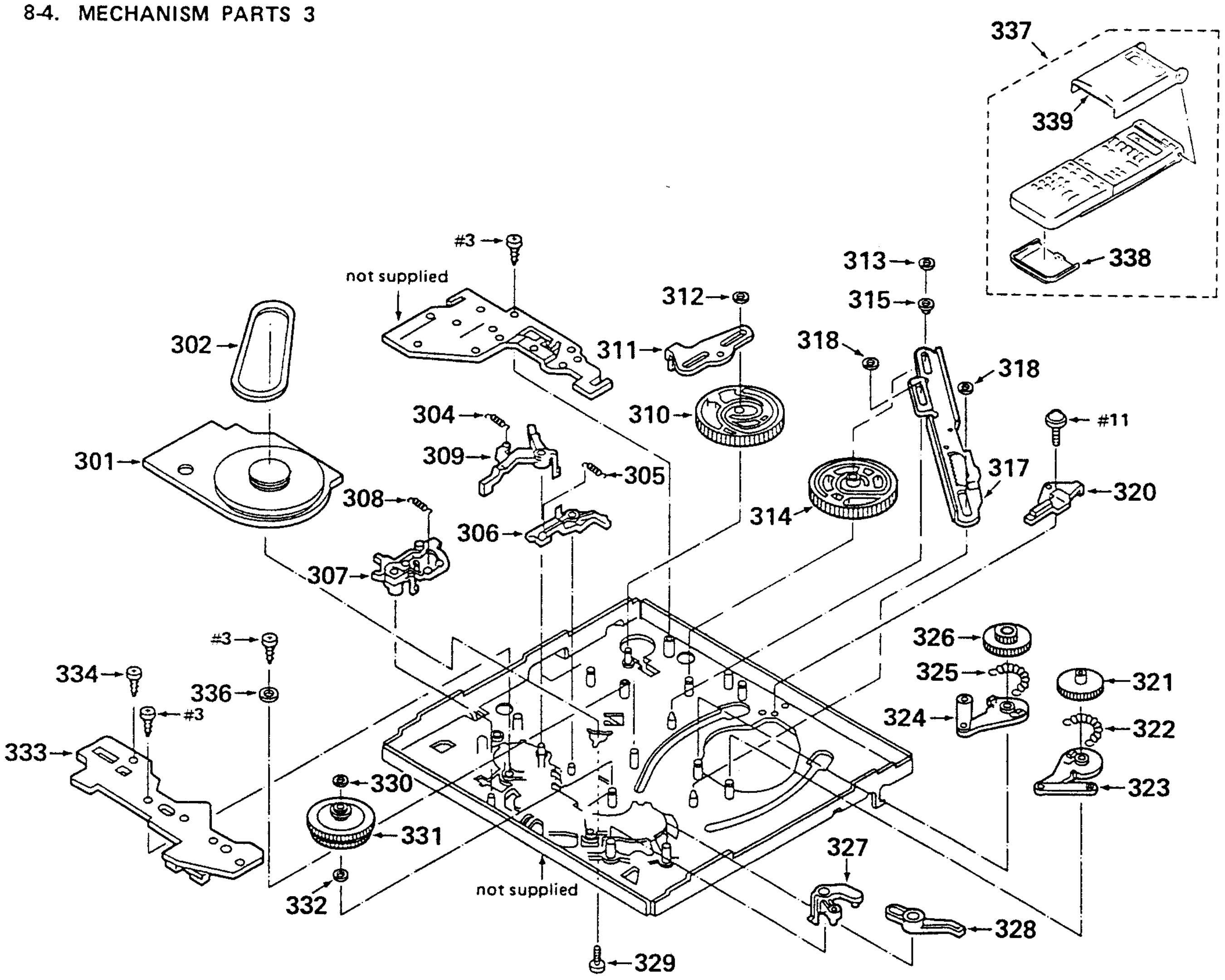
#8
#9

**Note:** Two Kinds of "LEVER (ASSY), FE HEAD" of Location No.205 are shown in the Fig.A and Fig.B. When the form of "LEVER (ASSY), FE HEAD" is equal to the one in the Fig.A, "WASHER" of Location No.283 is needed. However if the form is equal to the Fig.B, it is not necessary.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | 3-948-510-01 | NUT (HEX 3) | |
| 202 | 3-942-674-01 | GUIDE, TAPE | |
| 203 | 3-741-408-01 | WASHER, SPECIAL | |
| 204 | 3-735-686-01 | SPRING | |
| 205 | 3-948-476-01 | LEVER (ASSY), FF HEAD:(B) | |
| 205 | 3-740-353-01 | LEVER (ASSY), FF HEAD:(A) | |
| 206 | 3-735-771-01 | WASHER (DIA. 2), SPECIAL | |
| 207 | 3-749-021-01 | ROLLER, IMPEDANCE | |
| 208 | 3-741-407-01 | WASHER Y 1.5X4X0.25 | |
| 209 | 3-735-687-01 | HEAD, FTE | |
| 210 | 3-735-630-01 | ROLLER ASSY, GUIDE | |
| 211 | 3-735-629-01 | ROLLER (S) ASSY, BASE | |
| 213 | 3-735-632-01 | ROLLER (T) ASSY, BASE | |
| 214 | 3-943-187-01 | CAP | |
| 215 | 3-942-673-01 | SLEEVE | |
| 216 | 3-735-631-01 | PLATE, GUIDE | |
| 220 | 3-735-682-01 | NUT (M5), SPECIAL | |
| 221 | 3-749-106-01 | SPACER | |
| 222 | 3-735-679-01 | BRACKET, COMPL | |
| 223 | 3-735-680-01 | SPRING | |
| 224 | 3-735-759-01 | WASHER (DIA. 3) | |
| * 225 | 3-735-673-01 | PINCH LEVER ASSY | |
| * 226 | 3-735-672-01 | SLIDE ASSY, PINCH | |
| 227 | A-6773-727-A | CAM COMPLETE ASSY, SLIDE | |
| 228 | 3-735-668-01 | DAMPER | |
| 229 | 3-735-669-01 | SPRING | |
| 230 | 3-735-670-01 | SPRING | |
| 231 | 3-942-071-01 | STOPPER, BRACKET | |
| 232 | 3-741-410-01 | SCR PAN+SE+W 2.6X5 | |
| 240 | 3-942-090-01 | LEVER ASSY, CLEANER | |
| 241 | 3-735-758-01 | WASHER (DIA. 2.6) | |
| 242 | 3-944-844-01 | CLEANER ASSY, ROLLER | |
| 243 | 3-942-069-01 | SPRING | |
| 244 | 3-942-089-01 | BRACKET ASSY, CLEANER | |
| 245 | 3-741-414-01 | SCR PAN+SW+W 2.6X6 | |
| 246 | 3-735-706-01 | WORM ASSY, F | |
| 247 | 3-740-357-01 | WASHER | |
| 248 | 3-735-696-01 | HOLDER, WORM | |
| 249 | 3-741-412-01 | WASHER, SPECIAL | |
| 251 | 3-942-065-01 | BRACKET, HOLDER | |
| 252 | 3-735-703-01 | GEAR (F), HELICAL | |
| 253 | 3-740-366-01 | LEVER, FRONT | |
| 254 | 3-735-704-01 | GEAR | |
| 255 | 3-735-675-01 | SPRING | |
| 256 | 3-735-757-01 | WASHER (DIA. 3.6) | |
| 257 | 3-735-674-01 | PINCH ROLLER, COMPL | |
| 258 | 3-735-671-01 | LEVER, ACT BRAKE | |
| 259 | 3-735-660-01 | SPRING | |
| 260 | 3-749-023-01 | GUIDE (REV), LEVER ASSY | |
| 261 | 3-740-361-01 | GEAR, HELICAL | |
| 262 | 3-740-367-01 | WASHER, SLIT | |
| 263 | 3-735-709-01 | BELT (LOADING) | |
| 264 | 3-740-359-01 | LOAD WORM | |
| 265 | 3-735-774-01 | WASHER (DIA. 2) | |
| 266 | 3-741-413-01 | HOLDER WORM | |
| 267 | 3-740-364-01 | SPRING | |
| 268 | 3-740-363-01 | SPRING | |
| 269 | 3-740-362-01 | SLIDE, FRONT | |
| 270 | 1-572-383-11 | SWITCH, ROTARY | |
| 271 | 3-741-411-01 | SCR PAN 2.6X13 | |
| 272 | 3-740-354-01 | PLATE, NUT | |
| 273 | 3-735-708-01 | DAMPER, WORM | |
| 274 | 3-740-365-01 | DAMPER, MOTOR | |
| 275 | 3-942-091-01 | MOTOR ASSY, THREADING | |
| 276 | 3-740-358-01 | DAMPER, MOTOR | |
| * 278 | 1-589-398-11 | MC-3 BOARD | |
| 279 | 1-696-736-11 | FLEXIBLE FLAT CABLE, 24P | |
| * 281 | 1-589-397-11 | MC-2 BOARD | |
| 283 | 3-735-770-01 | WASHER (DIA. 6) | |
| * 289 | 1-461-017-11 | ROTOR | |
| 290 | 3-735-779-01 | SCREW PAN+SW 2.3X8 | |
| 291 | A-6050-748-A | COMPLETE PCB (2N2S-V), CYLINDER | |
| 292 | 3-735-778-01 | SCREW PAN+SW 2.3X6 | |
| 293 | 3-942-168-01 | CYLINDER ASSY (UPR 2N2S-V) | |
| 294 | 3-940-516-01 | CYLINDER ASSY (LOWER 2) | |
| 295 | 3-949-898-01 | SPACER, MOTOR | |
| * 296 | 3-735-737-01 | CYLINDER BASE | |
| 297 | 3-740-398-01 | SCR PAN+FLG 3X6 | |
| 298 | 3-735-777-01 | SCREW (2.6X8), +PWH | |
| 299 | 1-462-284-11 | STATOR | |

## 8-4. MECHANISM PARTS 3


337
339
338
#3
not supplied
313
315
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302
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308
314
306
307
326
#3
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336
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321
324
322
#3
333
330
323
331
327
not supplied
332
328
329

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | 3-740-369-01 | MOTOR, CAPSTAN | |
| 302 | 3-735-691-01 | BELT (REEL DRIVE) | |
| 304 | 3-740-351-01 | SPRING | |
| 305 | 3-735-648-01 | SPRING | |
| 306 | 3-735-647-01 | LEVER, CONVERSION CLUTCH | |
| 307 | 3-947-435-01 | CLUTCH (ASSY), LEVER | |
| 308 | 3-735-646-01 | SPRING | |
| 309 | 3-740-350-01 | BRAKE, CAPSTAN | |
| 310 | 3-735-639-01 | CAM, MODE | |
| * 311 | 3-735-643-01 | PLATE ASSY, CAM | |
| 312 | 3-735-759-01 | WASHER (DIA 3) | |
| 313 | 3-735-756-01 | WASHER (DIA 3) | |
| 314 | 3-947-406-01 | CAM, MAIN | |
| 315 | 3-948-514-01 | SPACER, RACK ROAD | |
| 317 | 3-948-513-01 | ROAD (ASSY), RACK | |
| 318 | 3-735-758-01 | WASHER (DIA 2.6) | |
| 320 | 3-735-693-01 | PLATE ASSY, GROUND | |
| 321 | 3-746-724-01 | ROAD (S), GEAR | |
| 322 | 3-735-634-01 | SPRING | |
| 323 | 3-735-633-01 | LOAD (S) ASSY, LEVER | |
| 324 | 3-735-636-01 | LOAD (T) ASSY, LEVER | |
| 325 | 3-735-637-01 | SPRING (T) | |
| 326 | 3-948-511-01 | GEAR, ROAD TAKE-UP | |
| 327 | 3-740-368-01 | CONTROL ASSY, LEVER | |
| 328 | 3-735-766-01 | LEVER, RETURN TENSION | |
| 329 | 3-740-355-01 | SCREW (+P) (2.6X5) | |
| 330 | 3-948-603-01 | WASHER, SPECIAL | |
| 331 | 3-741-402-01 | GEAR FRICTION | |
| 332 | 3-735-760-01 | WASHER (DIA 3), SPECIAL | |
| 333 | A-6756-237-A | MC-1 BOARD, COMPLETE | |
| 334 | 3-740-396-01 | SCR STPG BIN 2.6X5 | |
| 336 | 3-749-608-01 | WASHER (Z) | |
| 337 | 1-465-564-21 | REMOTE COMMANDER (RMT-V262C) (SLV-X27) | |
| 337 | 1-465-739-31 | REMOTE COMMANDER(RMT-V126)(225EI/225UB) | |
| 338 | 2-181-766-01 | COVER, BATTERY (SLV-225EI/225UB) | |
| 338 | 4-394-031-01 | COVER, BATTERY (SLV-X27) | |
| 339 | 3-949-043-01 | DOOR, REMOTE CONTROL | |

# SECTION 9
# ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the part specified in the diagrams or the components used on the set.
- -XX,-X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case,u : μ ,for example :
  uA... : μA..., uPA... : μPA...,
  uPB... : μPB..., uPC... : μPC...,
  uPD... : μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| * | A-6756-522-A | CP-1 BOARD, COMPLETE (SLV-X27) | | | | |
| | | ****************************** | | | | |
| * | A-6756-550-A | CP-1 BOARD, COMPLETE (SLV-225UB) | | | | |
| | | ******************************** | | | | |
| * | A-6756-658-A | CP-1 BOARD, COMPLETE (SLV-225EI) | | | | |
| | | ******************************** | | | | |
| | 1-575-925-11 | CORD | | | | |
| | 3-944-257-01 | SPRING, PLATE (SLV-225EI/X27) | | | | |
| | | < CAPACITOR > | | | | |
| C1001 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V | |
| C1002 | 1-164-077-11 | CERAMIC | 220PF | 10% | 50V | |
| C1003 | 1-164-060-11 | CERAMIC | 39PF | 5% | 50V | |
| C1004 | 1-162-211-31 | CERAMIC | 33PF | 5% | 50V | |
| C1005 | 1-124-465-00 | ELECT | 0.47uF | 20% | 50V | |
| C1006 | 1-162-195-31 | CERAMIC | 4.7PF | 10% | 50V | |
| C1007 | 1-162-289-31 | CERAMIC | 390PF | 10% | 50V | |
| C1009 | 1-162-195-31 | CERAMIC | 4.7PF | 10% | 50V | |
| C1010 | 1-162-280-31 | CERAMIC | 82PF | 10% | 50V | |
| C1011 | 1-126-157-11 | ELECT | 10uF | 20% | 16V | |
| C1012 | 1-126-157-11 | ELECT | 10uF | 20% | 16V | |
| C1013 | 1-124-465-00 | ELECT | 0.47uF | 20% | 50V | |
| C1014 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1015 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V | |
| C1016 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V | |
| C1017 | 1-162-207-31 | CERAMIC | 22PF | 5% | 50V | |
| C1021 | 1-164-079-11 | CERAMIC | 330PF | 10% | 50V | |
| C1022 | 1-161-772-11 | CERAMIC | 0.1uF | 10% | 25V | |
| C1023 | 1-162-219-31 | CERAMIC | 68PF | 5% | 50V | |
| C1024 | 1-162-219-31 | CERAMIC | 68PF | 5% | 50V | |
| C1027 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1029 | 1-127-551-11 | ELECT(SOLID) | 4.7uF | 20% | 10V | |
| C1030 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C1031 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C1032 | 1-161-021-11 | CERAMIC | 0.047uF | 10% | 25V | |
| C1033 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V | |
| C1034 | 1-101-890-00 | CERAMIC | 75PF | 5% | 50V | |
| C1036 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C1037 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C1038 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V | |
| C1039 | 1-161-021-11 | CERAMIC | 0.047uF | 10% | 25V | |
| C1040 | 1-162-207-31 | CERAMIC | 22PF | 5% | 50V | (SLV-X27) |
| C1041 | 1-126-157-11 | ELECT | 10uF | 20% | 16V | |
| C1042 | 1-161-021-11 | CERAMIC | 0.047uF | 10% | 25V | |
| C1043 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1044 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V | |
| C1045 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1046 | 1-126-157-11 | ELECT | 10uF | 20% | 16V | |
| C1047 | 1-126-157-11 | ELECT | 10uF | 20% | 16V | |
| C1048 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1049 | 1-162-203-31 | CERAMIC | 15PF | 5% | 50V | |
| C1050 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1051 | 1-162-290-31 | CERAMIC | 470PF | 10% | 50V | |
| C1052 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1053 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1054 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V | |
| C1055 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1056 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V | |
| C1060 | 1-162-199-31 | CERAMIC | 10PF | 5% | 50V | (SLV-X27) |
| C1061 | 1-162-211-31 | CERAMIC | 33PF | 5% | 50V | (SLV-X27) |
| C1062 | 1-162-816-11 | CERAMIC | 180PF | 5% | 50V | |
| C1081 | 1-162-292-31 | CERAMIC | 680PF | 10% | 50V | |
| C1101 | 1-124-589-11 | ELECT | 47uF | 20% | 16V | |
| C1102 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1103 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C1105 | 1-101-880-00 | CERAMIC | 47PF | 5% | 50V | |
| C1106 | 1-162-195-31 | CERAMIC | 4.7PF | 10% | 50V | |
| C1107 | 1-101-880-00 | CERAMIC | 47PF | 5% | 50V | |
| C1108 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V | |
| C1109 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1110 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V | |
| C1401 | 1-101-890-00 | CERAMIC | 75PF | 5% | 50V | (SLV-X27) |
| C1601 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V | |
| C1602 | 1-124-472-11 | ELECT | 470uF | 20% | 10V | |
| C2001 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C2002 | 1-162-293-31 | CERAMIC | 820PF | 10% | 50V | |
| C2004 | 1-124-229-00 | ELECT | 33uF | 20% | 10V | |
| C2005 | 1-161-053-00 | CERAMIC | 0.015uF | 10% | 50V | |
| C2009 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V | |
| C2010 | 1-124-234-00 | ELECT | 22uF | 20% | 16V | |

## CP-1

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C2013 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V |
| C2016 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C2017 | 1-124-242-00 | ELECT | 33uF | 20% | 25V |
| C2018 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C2019 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C2020 | 1-162-286-31 | CERAMIC | 220PF | 10% | 50V |
| C2021 | 1-130-309-00 | FILM | 0.033uF | 5% | 100V |
| C2022 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C2024 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C2025 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V |
| C2091 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C3001 | 1-124-257-00 | ELECT | 2.2uF | 20% | 50V |
| C3002 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3003 | 1-161-772-11 | CERAMIC | 0.1uF | 10% | 25V |
| C3004 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C3005 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C3008 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C3009 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3010 | 1-161-259-11 | CERAMIC | 10PF | 5% | 50V |
| C3011 | 1-161-259-11 | CERAMIC | 10PF | 5% | 50V |
| C3012 | 1-161-259-11 | CERAMIC | 0.01uF | 20% | 25V |
| C3016 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3017 | 1-162-288-31 | CERAMIC | 330PF | 10% | 50V |
| C3020 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3021 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C3022 | 1-126-168-11 | ELECT | 1000uF | 20% | 6.3V |
| C3023 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C3501 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3502 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3503 | 1-161-053-00 | CERAMIC | 0.015uF | 10% | 50V |
| C3505 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C3506 | 1-161-329-00 | CERAMIC | 0.0068uF | 30% | 25V |
| C3508 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C3509 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C3510 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3511 | 1-162-286-31 | CERAMIC | 220PF | 10% | 50V |
| C3512 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V |
| C3513 | 1-161-061-11 | CERAMIC | 0.068uF | 10% | 50V |
| C3514 | 1-136-165-00 | FILM | 0.1uF | 5% | 50V |
| C3515 | 1-130-481-00 | MYLAR | 0.0068uF | 5% | 50V |
| C3516 | 1-161-039-00 | CERAMIC | 0.001uF | 10% | 50V |
| C3517 | 1-161-039-00 | CERAMIC | 0.001uF | 10% | 50V |
| C3518 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C3519 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |
| C3520 | 1-136-167-00 | FILM | 0.15uF | 5% | 50V |
| C3521 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C3522 | 1-161-021-11 | CERAMIC | 0.047uF | 10% | 25V |
| C3523 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C3524 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C3525 | 1-124-268-00 | ELECT | 0.22uF | 20% | 50V |
| C3526 | 1-161-021-11 | CERAMIC | 0.047uF | 10% | 25V |
| C3527 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C3528 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C3529 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C3530 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C3532 | 1-130-494-11 | MYLAR | 0.082uF | 5% | 50V |
| C3536 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C3537 | 1-161-047-00 | CERAMIC | 0.0047uF | 10% | 50V |
| C3540 | 1-161-327-00 | CERAMIC | 0.0033uF | 30% | 50V |
| C3542 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C3548 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C3572 | 1-130-480-00 | MYLAR | 0.0056uF | 5% | 50V |
| C3573 | 1-130-486-00 | MYLAR | 0.018uF | 10% | 50V |
| C5401 | 1-161-379-00 | CERAMIC | 0.01uF | 20% | 25V (SLV-X27) |
| C5402 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V(SLV-X27) |
| C6001 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C6002 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V<br>(SLV-225EI/X27) |
| C6003 | 1-126-301-11 | ELECT | 1uF | 20% | 50V<br>(SLV-225EI/X27) |
| C6004 | 1-136-165-00 | FILM | 0.1uF | 5% | 50V |
| C6005 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V<br>(SLV-225EI/X27) |
| C6006 | 1-124-036-11 | ELECT | 330uF | 20% | 16V |
| C6007 | 1-101-006-00 | CERAMIC | 0.047uF | | 50V |
| C6009 | 1-123-357-11 | ELECT | 22uF | 20% | 50V |
| C6010 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C6015 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C6017 | 1-162-290-31 | CERAMIC | 470PF | 10% | 50V |
| C6019 | 1-161-063-11 | CERAMIC | 0.1uF | 10% | 50V |
| C6601 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C6602 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C6611 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C6901 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C6902 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C6903 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V |
| C6904 | 1-124-464-11 | ELECT | 0.22uF | 20% | 50V |
| C6921 | 1-161-063-00 | CERAMIC | 0.1uF | 10% | 50V |
| C6922 | 1-102-976-00 | CERAMIC | 180PF | 5% | 50V |
| C6923 | 1-161-039-00 | CERAMIC | 0.001uF | 10% | 50V |
| C6924 | 1-136-502-11 | MYLAR | 0.33uF | 5% | 50V |
| C6925 | 1-130-499-00 | MYLAR | 0.22uF | 5% | 50V |

< DIODE >

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| D1003 | 8-719-912-20 | DIODE | FDH300 |
| D1006 | 8-719-912-20 | DIODE | FDH300 |
| D1007 | 8-719-912-20 | DIODE | FDH300 |
| D1101 | 8-719-110-13 | DIODE | RD9.1ES-B2 |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D1201 | 8-719-912-20 | DIODE FDH300 | |
| D1601 | 8-719-912-20 | DIODE FDH300 | |
| D1602 | 8-719-912-20 | DIODE FDH300 | |
| D1603 | 8-719-912-20 | DIODE FDH300 | |
| D3001 | 8-719-986-73 | DIODE RB441Q | |
| D3002 | 8-719-109-89 | DIODE RD5. 6ES-B2 | |
| D3003 | 8-719-110-08 | DIODE RD8. 2ES-B2 | |
| D3502 | 8-719-911-19 | DIODE 1SS119 | |
| D3503 | 8-719-911-19 | DIODE 1SS119 | |
| D3504 | 8-719-911-19 | DIODE 1SS119 | |
| D3505 | 8-719-911-19 | DIODE 1SS119 | |
| D3506 | 8-719-911-19 | DIODE 1SS119 | |
| D3507 | 8-719-986-73 | DIODE RB441Q | |
| D5401 | 8-719-912-20 | DIODE FDH300 (SLV-X27) | |
| D5402 | 8-719-921-44 | DIODE MTZJ-5. 1C (SLV-X27) | |
| D5403 | 8-719-109-97 | DIODE RD6. 8ES-B2 (SLV-X27) | |
| D5403 | 8-719-110-31 | DIODE RD12ES-B2 (SLV-225EI/225UB) | |
| D5404 | 8-719-901-83 | DIODE 1SS83 | |
| D5405 | 8-719-110-63 | DIODE RD24ES-B3 (SLV-225EI/225UB) | |
| D5405 | 8-719-921-83 | DIODE MTZJ-12A (SLV-X27) | |
| D5406 | 8-719-010-34 | DIODE UZ-4. 7BSC (SLV-X27) | |
| D5406 | 8-719-921-63 | DIODE MTZJ-T-77-7. 5B(SLV-225EI/225UB) | |
| D5407 | 8-719-921-83 | DIODE MTZJ-12A (SLV-X27) | |
| D5411 | 1-809-070-11 | DIODE AK04-V2 (SLV-X27) | |
| D6002 | 8-719-912-20 | DIODE 1SS120 (SLV-225UB) | |
| D6002 | 8-719-981-94 | DIODE MTZJ-2. 7A (SLV-225EI/X27) | |
| D6901 | 8-719-912-20 | DIODE FDH300 | |
| D6902 | 8-719-912-20 | DIODE FDH300 | |
| D6903 | 8-719-912-20 | DIODE FDH300 | |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC101 | 1-809-674-11 | IC LA7395 | |
| IC111 | 8-759-821-51 | IC LC8992 | |
| IC201 | 1-808-746-11 | IC LA7295 | |
| IC301 | 1-809-887-11 | IC LC866227A-5241 | |
| IC302 | 8-759-822-09 | IC LB1641 | |
| IC303 | 1-809-383-11 | IC MN1380-L | |
| IC351 | 1-809-478-11 | IC XRU2797S | |
| IC601 | 8-759-157-40 | IC uPC574J | |
| IC602 | 1-809-676-11 | IC ST24C01B1 (SLV-225EI/X27) | |
| IC602 | 8-759-043-86 | IC ST24C02AB1 (SLV-225UB) | |
| IC691 | 8-759-800-65 | IC LA7910 | |

< COIL >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L1001 | 1-410-516-11 | INDUCTOR 39uH | |
| L1002 | 1-410-316-11 | INDUCTOR 1uH | |
| L1004 | 1-412-818-11 | INDUCTOR 150uH | |
| L1005 | 1-410-525-11 | INDUCTOR 220uH | |
| L1006 | 1-410-525-11 | INDUCTOR 220uH | |
| L1007 | 1-410-322-11 | INDUCTOR 3. 3uH | |
| L1009 | 1-412-815-11 | INDUCTOR 2. 2uH | |
| L1012 | 1-410-513-11 | INDUCTOR 22uH (SLV-X27) | |
| L1013 | 1-410-515-11 | INDUCTOR 33uH | |
| L1040 | 1-410-515-11 | INDUCTOR 33uH (SLV-X27) | |
| L1081 | 1-410-521-11 | INDUCTOR 100uH | |
| L1101 | 1-410-520-11 | INDUCTOR 82uH | |
| L2002 | 1-412-822-11 | HF CHOKE 10000uHJ | |
| L2003 | 1-410-491-11 | INDUCTOR 560uH | |
| L3001 | 1-410-316-11 | INDUCTOR 1uH | |
| L6001 | 1-410-518-11 | INDUCTOR 56uH (SLV-225EI/X27) | |
| L6003 | 1-410-509-11 | INDUCTOR 10uH | |
| L6005 | 1-410-509-11 | INDUCTOR 10uH (SLV-225EI/X27) | |
| L6006 | 1-410-509-11 | INDUCTOR 10uH (SLV-225EI/X27) | |
| L6008 | 1-410-509-11 | INDUCTOR 10uH (SLV-225EI/X27) | |
| L6601 | 1-408-411-00 | INDUCTOR 15uH | |
| L6603 | 1-410-509-11 | INDUCTOR 10uH | |

< TRANSISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q1002 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q1003 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q1004 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q1006 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1007 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1009 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1011 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q1012 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1013 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q1014 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1101 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1102 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1151 | 8-729-900-36 | TRANSISTOR DTC124ES | |
| Q1152 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q1201 | 8-729-900-65 | TRANSISTOR DTA144ES | |
| Q1401 | 8-729-900-89 | TRANSISTOR DTC144ES (SLV-X27) | |
| Q1601 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q2001 | 8-729-873-40 | TRANSISTOR 2SD734-E | |
| Q3002 | 8-729-900-80 | TRANSISTOR DTC114ES | |
| Q3501 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q3502 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q3504 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q3505 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q3571 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q3572 | 8-729-900-36 | TRANSISTOR DTC124ES | |
| Q3573 | 8-729-900-61 | TRANSISTOR DTA114ES | |
| Q5401 | 8-729-205-95 | TRANSISTOR 2SA1428-Y | |
| Q5402 | 8-729-205-97 | TRANSISTOR 2SC3668-Y | |
| Q5403 | 8-729-111-52 | TRANSISTOR 2SB984-K (SLV-X27) | |
| Q5403 | 8-729-140-97 | TRANSISTOR KSA708 (SLV-225EI/225UB) | |

## CP-1 CP-2

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q5404 | 8-729-140-97 | TRANSISTOR KSA708 | (SLV-225EI/225UB) |
| Q6001 | 1-809-781-11 | TRANSISTOR 2SK68A-K | (SLV-225UB) |
| Q6001 | 8-729-103-12 | TRANSISTOR 2SK68A-M | (SLV-225EI/X27) |
| Q6002 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q6004 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q6611 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q6901 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q6902 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | |
| Q6903 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q6904 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q6921 | 8-729-345-85 | TRANSISTOR 2SC458K | |

< RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R3001 | 1-212-946-00 | FUSIBLE 3.3 5% 1/2W F | |
| ⚠R5404 | 1-212-897-00 | FUSIBLE 470 5% 1/4W F | (SLV-X27) |
| ⚠R5404 | 1-219-160-11 | RES, FUSE 820 1/4W | (SLV-225EI/225UB) |
| ⚠R5408 | 1-212-873-11 | FUSIBLE 47 5% 1/4W F | (SLV-225EI/225UB) |
| ⚠R5408 | 1-212-889-00 | FUSIBLE 220 5% 1/4W F | (SLV-X27) |

< TRANSFORMER >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| T2001 | 1-406-366-11 | COIL, OSC | |
| T6901 | 1-426-511-11 | TRANSFORMER, IF | |

< VARIABLE RESISTOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| VR101 | 1-228-995-00 | RES, ADJ, METAL 22K | |
| VR102 | 1-228-991-00 | RES, ADJ, METAL 2.2K | |
| VR103 | 1-228-993-11 | RES, ADJ, METAL 4.7K | |
| VR104 | 1-228-994-00 | RES, ADJ, METAL 10K | |
| VR201 | 1-228-997-00 | RES, ADJ, METAL 100K | |
| VR351 | 1-228-998-00 | RES, ADJ, METAL 220K | |

< VIBRATOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| X1001 | 1-577-667-11 | CRYSTA, OSC (4.43MHz) | |
| X3001 | 1-579-681-11 | RESONATOR, CERAMIC (13.92MHz) | |
| X3002 | 1-579-220-11 | CRYSTAL, OSC (32KHz) | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6756-510-A | CP-2 BOARD, COMPLETE | (SLV-X27) |
| * | A-6756-554-A | CP-2 BOARD, COMPLETE | (SLV-225EI/225UB) |

< CAPACITOR >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C1701 | 1-161-039-00 | CERAMIC 0.001uF 10% 50V | |
| C1702 | 1-162-207-31 | CERAMIC 22PF 5% 50V | |
| C1711 | 1-161-039-00 | CERAMIC 0.001uF 10% 50V | |
| C1712 | 1-162-207-31 | CERAMIC 22PF 5% 50V | |
| C1713 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1721 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | (SLV-X27) |
| C1722 | 1-164-073-11 | CERAMIC 100PF 10% 50V | (SLV-X27) |
| C1723 | 1-126-157-11 | ELECT 10uF 20% 16V | (SLV-X27) |
| C1724 | 1-136-165-00 | FILM 0.1uF 5% 50V | (SLV-X27) |
| C1725 | 1-126-157-11 | ELECT 10uF 20% 16V | (SLV-X27) |
| C1751 | 1-130-477-00 | MYLAR 0.0033uF 5% 50V | |
| C1752 | 1-130-477-00 | MYLAR 0.0033uF 5% 50V | |
| C1753 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1754 | 1-136-165-00 | FILM 0.1uF 5% 50V | |
| C1755 | 1-130-470-00 | MYLAR 820PF 5% 50V | |
| C1756 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1757 | 1-126-154-11 | ELECT 47uF 20% 6.3V | |
| C1758 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1759 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1760 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1761 | 1-164-073-11 | CERAMIC 100PF 10% 50V | |
| C1762 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1763 | 1-164-064-11 | CERAMIC 56PF 5% 50V | |
| C1764 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1765 | 1-164-064-11 | CERAMIC 56PF 5% 50V | |
| C1766 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1767 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |

< DIODE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D1721 | 8-719-911-19 | DIODE 1SS119 | (SLV-X27) |
| D1751 | 8-719-911-19 | DIODE 1SS119 | |
| D1752 | 8-719-911-19 | DIODE 1SS119 | |

< DELAY LINE >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| DL171 | 1-415-707-11 | DELAY | |
| DL172 | 1-415-830-11 | DELAY 1H 4.43NTSC | (SLV-225EI/225UB) |
| DL172 | 1-415-913-11 | DELAY 1H | (SLV-X27) |

< IC >

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC171 | 8-759-996-63 | IC BA7025L | (SLV-X27) |
| IC172 | 1-809-230-11 | IC M52063SP | |

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < COIL > | |
| L1701 | 1-410-511-11 | INDUCTOR 15uH | |
| L1702 | 1-410-515-11 | INDUCTOR 33uH | |
| L1711 | 1-410-515-11 | INDUCTOR 33uH | |
| | | < TRANSISTOR > | |
| Q1701 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1711 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q1721 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE (SLV-X27) | |
| Q1722 | 8-729-900-89 | TRANSISTOR DTC144ES (SLV-X27) | |
| Q1723 | 8-729-900-65 | TRANSISTOR DTA144ES (SLV-X27) | |
| Q1751 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| | | < RESISTOR > | |
| R1753 | 1-214-761-00 | METAL 22K 1% | 1/4W |
| | | < VIBRATOR > | |
| XF171 | 1-236-633-11 | FILTER (SLV-X27) | |
| XF172 | 1-433-396-11 | TRANSFORMER, OSCILLATION (SLV-X27) | |

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A-6756-237-A MC-1 BOARD, COMPLETE

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1-571-932-11 SWITCH, LEAF
1-808-723-11 PHOTO COUPLER SPI-315-04-C

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* A-6756-374-A MC-4 BOARD, COMPLETE

*********************

1-808-722-11 DIODE LN59

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* A-6756-528-A PW-1 BOARD, COMPLETE (SLV-X27)

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* A-6756-557-A PW-1 BOARD, COMPLETE (SLV-225UB)

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* A-6756-656-A PW-1 BOARD, COMPLETE (SLV-225EI)

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1-533-183-11 HOLDER, FUSE (SLV-X27)
1-533-258-11 HOLDER, FUSE (SLV-225EI/225UB)
1-533-259-11 HOLDER, FUSE (SLV-225EI/225UB)
3-740-374-01 COVER (SLV-225EI/225UB)
3-740-387-01 SCR S-TPG BIN 4X8 (SLV-225EI/225UB)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < CAPACITOR > | |
| ⚠C5001 | 1-130-679-11 | FILM 0.068uF 20% | 300V (X27) |
| ⚠C5001 | 1-137-151-11 | CAP, PE 4700PF | 250V (SLV-225EI/225UB) |
| ⚠C5002 | 1-136-344-11 | FILM 0.047uF 20% | 300V (X27) |
| ⚠C5003 | 1-128-529-11 | CAP, ELECT 82uF | 400V (X27) |
| C5004 | 1-137-089-11 | MT-POLYEST 0.047uF | 630V (X27) |
| C5005 | 1-165-113-11 | CAP, CERAMIC 100PF | 1K (X27) |
| C5007 | 1-128-507-11 | CAP, ELECT 1uF | 400V (X27) |
| C5008 | 1-127-549-11 | ELECT(SOLID) 2.2uF 20% | 16V (X27) |
| C5009 | 1-130-479-00 | MYLAR 0.0047uF 5% | 50V (X27) |
| C5010 | 1-164-077-11 | CERAMIC 220PF 10% | 50V (X27) |
| C5011 | 1-161-375-00 | CERAMIC 0.0022uF 20% | 50V (X27) |
| C5014 | 1-130-738-00 | FILM 0.015uF 5% | 50V (X27) |
| C5015 | 1-130-486-00 | MYLAR 0.018uF 10% | 50V (X27) |
| ⚠C5020 | 1-161-742-00 | CERAMIC 0.0022uF 20% | 400V (X27) |
| ⚠C5021 | 1-161-742-00 | CERAMIC 0.0022uF 20% | 400V (X27) |
| ⚠C5022 | 1-161-742-00 | CERAMIC 0.0022uF 20% | 400V (X27) |
| ⚠C5023 | 1-161-742-00 | CERAMIC 0.0022uF 20% | 400V (X27) |
| C5101 | 1-104-632-11 | ELECT 820uF 20% | 16V (X27) |
| C5101 | 1-124-563-11 | ELECT 2200uF 20% | 25V (SLV-225EI) |
| C5101 | 1-126-105-11 | ELECT 1000uF 20% | 35V (SLV-225UB) |
| C5102 | 1-124-563-11 | ELECT 2200uF 20% | 25V (SLV-225EI/225UB) |
| C5102 | 1-126-103-11 | ELECT 470uF 20% | 16V (X27) |
| C5103 | 1-126-169-11 | ELECT 3300uF 25% | 16V (SLV-225EI) |
| C5103 | 1-128-182-11 | CAP, ELECT 2200uF | 50V (SLV-225UB) |
| C5104 | 1-104-581-11 | CAP, ELECT 1200uF | 6.3V (X27) |
| C5104 | 1-126-338-11 | ELECT 47uF 20% | 63V (SLV-225EI/225UB) |
| C5105 | 1-124-131-00 | ELECT 47uF 20% | 100V (SLV-225EI/225UB) |
| C5105 | 1-124-472-11 | ELECT 470uF 20% | 10V (X27) |
| C5106 | 1-124-910-11 | ELECT 47uF 20% | 50V (X27) |
| C5106 | 1-136-165-00 | FILM 0.1uF 5% | 50V (SLV-225EI/225UB) |
| C5107 | 1-124-910-11 | ELECT 47uF 20% | 50V (X27) |
| C5107 | 1-124-918-11 | ELECT 47uF 20% | 63V (SLV-225EI/225UB) |
| C5108 | 1-124-141-00 | ELECT 330uF 20% | 6.3V (X27) |
| C5109 | 1-161-021-11 | CERAMIC 0.047uF 10% | 25V (X27) |
| C5110 | 1-130-495-00 | MYLAR 0.1uF 5% | 50V (X27) |
| | | < DIODE > | |
| D5001 | 1-809-768-11 | DIODE DBC10G (SLV-X27) | |
| D5003 | 1-808-898-11 | DIODE AP01C-V0 (SLV-X27) | |
| D5004 | 1-808-899-11 | DIODE AG01-V2 (SLV-X27) | |
| D5005 | 8-719-901-83 | DIODE 1SS83 (SLV-X27) | |
| D5006 | 1-809-646-11 | DIODE GZB18C (SLV-X27) | |

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

## PW-1 PW-2 PW-3

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D5007 | 8-719-901-83 | DIODE 1SS83 (SLV-X27) | |
| D5008 | 8-719-901-83 | DIODE 1SS83 (SLV-X27) | |
| D5009 | 8-719-300-45 | DIODE EM-1Z (SLV-X27) | |
| D5010 | 1-809-504-11 | DIODE DSK10E-BT (SLV-X27) | |
| ⚠D5011 | 8-719-971-68 | DIODE PC113A (SLV-X27) | |
| D5101 | 1-809-769-11 | DIODE ERD32-02L37 (SLV-X27) | |
| D5103 | 8-719-981-00 | DIODE ERC81-004 (SLV-X27) | |
| D5104 | 1-808-899-11 | DIODE AG01-V2 (SLV-X27) | |
| D5105 | 8-719-901-83 | DIODE 1SS83 (SLV-X27) | |
| D5106 | 8-719-901-83 | DIODE 1SS83 (SLV-X27) | |
| D5107 | 1-808-899-11 | DIODE AG01-V2 (SLV-X27) | |
| D5101 | 8-719-200-02 | DIODE 10E2 (SLV-225EI/225UB) | |
| D5102 | 8-719-200-02 | DIODE 10E2 (SLV-225EI/225UB) | |
| D5103 | 1-809-765-11 | DIODE ERC04-02FL38 (SLV-225EI/225UB) | |
| D5104 | 1-809-765-11 | DIODE ERC04-02FL38 (SLV-225EI/225UB) | |
| D5105 | 8-719-300-45 | DIODE EM-1Z (SLV-225EI/225UB) | |
| D5106 | 8-719-300-45 | DIODE EM-1Z (SLV-225EI/225UB) | |
| D5107 | 8-719-300-45 | DIODE EM-1Z (SLV-225EI/225UB) | |
| D5108 | 8-719-300-45 | DIODE EM-1Z (SLV-225EI/225UB) | |
| D5109 | 8-719-901-83 | DIODE 1SS83 (SLV-225EI/225UB) | |
| D5110 | 8-719-901-83 | DIODE 1SS83 (SLV-225EI/225UB) | |
| D5111 | 8-719-901-83 | DIODE 1SS83 (SLV-225EI/225UB) | |
| D5112 | 8-719-901-83 | DIODE 1SS83 (SLV-225EI/225UB) | |
| | | < FUSE > | |
| F5001 | 1-532-203-00 | FUSE, TIME-LAG (SLV-X27) | |
| ⚠F5001 | 1-532-235-00 | FUSE, TIME-LAG (T315mA 250V) (SLV-225EI/225UB) | |
| ⚠F5101 | 1-532-215-00 | FUSE, TIME-LAG (T800mA 250V) (SLV-225EI/225UB) | |
| ⚠F5102 | 1-532-259-00 | FUSE, TIME-LAG (T1.6A 250V) (SLV-225EI/225UB) | |
| ⚠F5103 | 1-532-203-00 | FUSE, TIME-LAG (T2A 250V) (SLV-225EI/225UB) | |
| | | < IC > | |
| IC511 | 8-759-820-97 | IC L5431 (SLV-X27) | |
| | | < COIL > | |
| ⚠L5002 | 1-424-575-11 | COIL, LINE FILTER (SLV-X27) | |
| L5101 | 1-543-699-11 | CORE (SLV-X27) | |
| L5102 | 1-412-464-11 | INDUCTOR, COIL 10uH (SLV-X27) | |
| | | < TRANSISTOR > | |
| Q5001 | 1-809-502-11 | TRANSISTOR 2SK1460-YA (SLV-X27) | |
| Q5002 | 8-729-820-24 | TRANSISTOR 2SC3330-T (SLV-X27) | |
| Q5003 | 1-809-503-11 | TRANSISTOR 2SB1050-R (SLV-X27) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < RESISTOR > | |
| ⚠R5001 | 1-202-724-00 | SOLID 2.7M 10% 1/2W | (X27) |
| ⚠R5002 | 1-219-126-11 | RES, WIREWOUND (SLV-X27) | |
| R5003 | 1-215-903-11 | METAL OXIDE 68K 5% 2W F | (X27) |
| R5004 | 1-220-155-11 | OXIDE-MT 240K 1W | (X27) |
| R5005 | 1-215-903-11 | METAL OXIDE 68K 5% 2W F | (X27) |
| R5007 | 1-260-081-11 | CARBON 33 5% 1/2W | (X27) |
| R5008 | 1-260-087-11 | CARBON 100 5% 1/2W | (X27) |
| R5015 | 1-216-345-11 | METAL 0.47 5% 1W F | (X27) |
| R5016 | 1-260-135-11 | CARBON 1M 5% 1/2W | (X27) |
| R5101 | 1-238-872-11 | RES 2.7 | (X27) |
| R5101 | 1-247-754-11 | CARBON 1.5K 5% 1/2W | (SLV-225EI/225UB) |
| R5102 | 1-247-754-11 | CARBON 1.5K 5% 1/2W | (SLV-225EI/225UB) |
| R5105 | 1-215-426-00 | METAL 1.6K 1% 1/6W | (X27) |
| R5106 | 1-220-156-11 | MT-FILM 2.05K 1/4W | (X27) |
| | | < TRANSFORMER > | |
| ⚠T5001 | 1-450-676-11 | TRANSFORMER, POWER (SLV-X27) | |
| ⚠T5071 | 1-450-989-11 | TRANSFORMER, POWER (SLV-225EI) | |
| ⚠T5071 | 1-697-017-11 | TRANSFORMER, POWER (SLV-225UB) | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6756-516-A | PW-2 BOARD, COMPLETE (SLV-225EI/225UB) | |
| | | ************************************** | |
| * | A-6756-521-A | PW-2 BOARD, COMPLETE (SLV-X27) | |
| | | ****************************** | |
| | | < CAPACITOR > | |
| C5201 | 1-161-772-11 | CERAMIC 0.1uF 10% 25V | (X27) |
| C5203 | 1-124-455-00 | ELECT 100uF 20% 16V | (X27) |
| | | < DIODE > | |
| D5205 | 8-719-300-45 | DIODE EM-1Z (SLV-X27) | |
| D5210 | 1-809-555-11 | DIODE THYRISTOR DRA2TC (SLV-X27) | |
| D5211 | 8-719-110-49 | DIODE RD18ES-B2 (SLV-X27) | |
| | | < IC > | |
| IC521 | 1-808-795-11 | IC SI3120CA (SLV-X27) | |
| IC521 | 1-809-031-11 | IC STK5446 (SLV-225EI/225UB) | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6756-285-A | PW-3 BOARD, COMPLETE (SLV-X27) | |
| | | ****************************** | |
| * | A-6756-517-A | PW-3 BOARD, COMPLETE (SLV-225EI/225UB) | |
| | | ************************************** | |
| | | < CONNECTOR > | |
| CN531 | 1-573-623-11 | CONNECTOR, INLET | |

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6756-508-A | TB-1 BOARD, COMPLETE | (SLV-225EI/225UB) |
| | | ****************************************** | |
| * | A-6756-525-A | TB-1 BOARD, COMPLETE | (SLV-X27) |
| | | ****************************** | |
| | | < CAPACITOR > | |
| C8551 | 1-161-329-00 | CERAMIC 0.0068uF 30% 25V | |
| C8552 | 1-161-039-00 | CERAMIC 0.001uF 10% 50V | |
| C8601 | 1-126-529-11 | ELECT 0.47uF 20% 50V | |
| C8602 | 1-126-157-11 | ELECT 10uF 20% 16V | |
| C8604 | 1-161-063-00 | CERAMIC 0.1uF 10% 50V | |
| C8605 | 1-162-282-31 | CERAMIC 100PF 10% 50V | (SLV-225EI/225UB) |
| | | < CONNECTOR > | |
| CN871 | 1-573-617-11 | SOCKET 21P | (SLV-225EI/225UB) |
| | | < DIODE > | |
| D8502 | 8-719-912-20 | DIODE FDH300 | |
| D8601 | 8-719-109-89 | DIODE RD5.6ES-B2 | |
| D8651 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/225UB) |
| D8652 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/225UB) |
| | | < IC > | |
| IC861 | 8-759-820-48 | IC LA7221 | |
| | | < TRANSISTOR > | |
| Q8501 | 8-729-907-34 | TRANSISTOR 2SD1468S-S | |
| Q8502 | 8-729-907-34 | TRANSISTOR 2SD1468S-S | |
| Q8503 | 8-729-900-65 | TRANSISTOR DTA144ES | |
| Q8511 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q8601 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q8602 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q8651 | 8-729-119-76 | TRANSISTOR 2SA1175-HFE | (SLV-225EI/225UB) |
| Q8652 | 8-729-900-89 | TRANSISTOR DTC144ES | (SLV-225EI/225UB) |
| | | ************************************************************ | |
| * | A-6756-526-A | TM-1 BOARD, COMPLETE | (SLV-X27) |
| | | ****************************** | |
| * | A-6756-558-A | TM-1 BOARD, COMPLETE | (SLV-225UB) |
| | | ******************************* | |
| * | A-6756-657-A | TM-1 BOARD, COMPLETE | (SLV-225EI) |
| | | ******************************* | |
| * | 3-947-398-01 | HOLDER | |
| * | 3-947-424-01 | HOLDER, LED | |
| * | 3-947-425-01 | HOLDER, LED | |
| | | < INDICATOR TUBE FLUORESCENT > | |
| A7001 | 1-519-697-11 | INDICATOR TUBE FLUORESCENT | |
| | | < CAPACITOR > | |
| C7001 | 1-136-956-11 | DL-ELECT 0.047FZ | |
| C7002 | 1-126-163-11 | ELECT 4.7uF 20% 50V | |
| C7003 | 1-126-163-11 | ELECT 4.7uF 20% 50V | |
| C7071 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | (SLV-225EI/225UB) |
| C7072 | 1-124-257-00 | ELECT 2.2uF 20% 50V | (SLV-225EI/225UB) |
| | | < DIODE > | |
| D7006 | 8-719-912-20 | DIODE FDH300 | (SLV-225UB) |
| D7008 | 8-719-912-20 | DIODE FDH300 | |
| D7009 | 8-719-912-20 | DIODE FDH300 | |
| D7011 | 8-719-912-20 | DIODE FDH300 | |
| D7012 | 8-719-912-20 | DIODE FDH300 | |
| D7013 | 8-719-912-20 | DIODE FDH300 | |
| D7014 | 8-719-912-20 | DIODE FDH300 | (SLV-225UB/X27) |
| D7015 | 8-719-912-20 | DIODE FDH300 | |
| D7025 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/X27) |
| D7026 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/225UB) |
| D7031 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/X27) |
| D7032 | 8-719-912-20 | DIODE FDH300 | (SLV-X27) |
| D7041 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI) |
| D7042 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI) |
| D7043 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI) |
| D7044 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI) |
| D7051 | 8-719-301-44 | LED SEL2410E-D | (AUTO) |
| D7052 | 8-719-301-44 | LED SEL2410E-D | (AUTO) |
| D7053 | 8-719-912-20 | DIODE FDH300 | |
| D7061 | 8-719-301-44 | LED SEL2410E-D | (NTSC) |
| D7062 | 8-719-301-44 | LED SEL2410E-D | (SLV-X27) |
| D7071 | 8-719-109-93 | DIODE RD6.2ES-B2 | (SLV-225EI) |
| D7071 | 8-719-912-20 | DIODE FDH300 | (SLV-225UB) |
| D7072 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/225UB) |
| D7073 | 8-719-912-20 | DIODE FDH300 | (SLV-225EI/225UB) |
| | | < COIL > | |
| L7001 | 1-410-515-11 | INDUCTOR 33uH | |
| | | < TRANSISTOR > | |
| Q7051 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q7071 | 8-729-900-89 | TRANSISTOR DTC144ES | (SLV-225EI/225UB) |
| Q7072 | 8-729-900-65 | TRANSISTOR DTA144ES | (SLV-225EI/225UB) |
| | | < RECEIVER BACK UNIT > | |
| RR701 | 1-466-717-11 | BACK UNIT, IR RECEIVER | |

## TM-1 TM-2 VP-1

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < SWITCH > | |
| S7001 | 1-692-061-11 | SWITCH, PUSH (REW) (SLV-X27) | |
| S7002 | 1-692-061-11 | SWITCH, PUSH (FF) (SLV-X27) | |
| S7005 | 1-692-104-11 | SWITCH, PUSH (PROGRAM +) | |
| S7007 | 1-692-104-11 | SWITCH, PUSH (CL) | |
| S7011 | 1-692-061-11 | SWITCH, PUSH (PLAY) (SLV-X27) | |
| S7012 | 1-692-061-11 | SWITCH, PUSH (STOP) (SLV-X27) | |
| S7015 | 1-692-104-11 | SWITCH, PUSH (PROGRAM -) | |
| S7021 | 1-692-104-11 | SWITCH, PUSH (REC) | |
| S7022 | 1-692-216-11 | SWITCH, PUSH (PAUSE) (SLV-X27) | |
| S7024 | 1-692-104-11 | SWITCH, PUSH (TUNER PRESET) | |
| S7025 | 1-692-104-11 | SWITCH, PUSH (NEXT) | |
| S7029 | 1-692-104-11 | SWITCH, PUSH (PAUSE) (SLV-225EI/225UB) | |
| S7051 | 1-572-662-11 | SWITCH, ROTARY (PLAY/STOP/REW/FF) (SLV-225EI/225UB) | |

* * *

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6756-519-A | TM-2 BOARD, COMPLETE (SLV-225EI/225UB) | |
| * | A-6756-527-A | TM-2 BOARD, COMPLETE (SLV-X27) | |
| | 3-943-546-01 | HOLDER, LED | |
| | | < DIODE > | |
| D7101 | 1-809-516-11 | LED MPG3868S-J85K-E (ON/STANDBY) | |
| D7102 | 1-809-516-11 | LED MPG3868S-J85K-E (ON/STANDBY) | |
| | | < SWITCH > | |
| S7101 | 1-692-104-11 | SWITCH, PUSH (TRACKING +) | |
| S7102 | 1-692-104-11 | SWITCH, PUSH (AUTO) | |
| S7103 | 1-692-104-11 | SWITCH, PUSH (TRACKING -) | |
| S7104 | 1-692-104-11 | SWITCH, PUSH (EJECT) | |
| S7105 | 1-692-104-11 | SWITCH, PUSH (ON/STANDBY) | |
| S7121 | 1-572-382-11 | SWITCH, SLIDE (RENTAL) (SLV-X27) | |
| S7152 | 1-692-107-11 | SWITCH, SLIDE 2-2 (COLOR SYSTEM) (SLV-225EI/225UB) | |
| S7152 | 1-692-125-11 | SWITCH, SLIDE 2-3 NS(COLOR SYSTEM)(X27) | |
| | | < VARIABLE RESISTOR > | |
| VR711 | 1-241-889-11 | VR, ROTARY 3KB (SHARPNESS)(225EI/225UB) | |

* * *

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-6756-513-A | VP-1 BOARD, COMPLETE | |
| | | < CAPACITOR > | |
| C1801 | 1-127-487-00 | ELECT(SOLID) 4.7uF 20% 10V | |
| C1804 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1805 | 1-124-252-00 | ELECT 0.33uF 20% 50V | |
| C1807 | 1-162-290-31 | CERAMIC 470PF 10% 50V | |
| C1808 | 1-164-073-11 | CERAMIC 100PF 10% 50V | |
| C1809 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1810 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1811 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1812 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1813 | 1-161-057-00 | CERAMIC 0.033uF 10% 50V | |
| C1814 | 1-161-057-00 | CERAMIC 0.033uF 10% 50V | |
| C1851 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1852 | 1-162-211-31 | CERAMIC 33PF 5% 50V | |
| C1853 | 1-162-211-31 | CERAMIC 33PF 5% 50V | |
| C1854 | 1-101-880-00 | CERAMIC 47PF 5% 50V | |
| C1855 | 1-164-064-11 | CERAMIC 56PF 5% 50V | |
| C1861 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C1862 | 1-126-154-11 | ELECT 47uF 20% 6.3V | |
| | | < IC > | |
| IC181 | 1-809-705-11 | IC LA7377 | |
| | | < COIL > | |
| L1801 | 1-410-520-11 | INDUCTOR 82uH | |
| L1802 | 1-410-519-11 | INDUCTOR 68uH | |
| L1851 | 1-412-454-11 | HF CHOKE 5.6uH | |
| L1852 | 1-410-518-41 | INDUCTOR 56uH | |
| L1853 | 1-410-511-11 | INDUCTOR 15uH | |
| L1854 | 1-410-511-11 | INDUCTOR 15uH | |
| | | < TRANSISTOR > | |
| Q1801 | 8-729-266-83 | TRANSISTOR 2SC2668 | |
| Q1851 | 8-729-266-83 | TRANSISTOR 2SC2668 | |
| Q1852 | 8-729-266-83 | TRANSISTOR 2SC2668 | |
| | | < VARIABLE RESISTOR > | |
| VR182 | 1-228-991-00 | RES, ADJ, METAL 2.2K | |

* * *

## MISCELLANEOUS

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 25 | 1-466-258-11 | RF MODULATOR (SLV-X27) | |
| 25 | 1-466-754-11 | RF MODULATOR (SLV-225UB) | |
| 25 | 1-466-754-11 | RF MODULATOR (SLV-225EI) | |
| 27 | 1-465-340-11 | TUNER PACK (SLV-X27) | |
| 27 | 1-465-352-11 | TUNER PACK (SLV-225EI) | |
| 27 | 1-693-179-11 | TUNER PACK (SLV-225UB) | |
| 28 | 1-466-257-11 | IF PACK (SLV-X27) | |
| 28 | 1-466-753-11 | IF PACK (SLV-225UB) | |
| 28 | 1-466-778-11 | IF PACK (SLV-225EI) | |
| 105 | 1-808-710-11 | PHOTO TRANSISTOR | |
| 270 | 1-572-383-11 | SWITCH, ROTARY | |
| 279 | 1-696-736-11 | FLEXIBLE FLAT CABLE, 24P | |
| * 289 | 1-461-017-11 | ROTOR | |
| 299 | 1-462-284-11 | STATOR | |

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## ACCESSORIES & PACKING MATERIALS

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | 1-465-564-21 | REMOTE COMMANDER (RMT-V262C) (SLV-X27) | |
| | 1-465-739-31 | REMOTE COMMANDER (RMT-V126) (SLV-225EI/225UB) | |
| ⚠ | 1-590-224-11 | CORD, POWER (SLV-225EI/X27) | |
| ⚠ | 1-590-866-21 | CORD, POWER (SLV-225UB) | |
| | 1-696-390-11 | CABLE, ANT (SLV-225UB/X27) | |
| | 2-181-766-01 | COVER, BATTERY (SLV-225EI/225UB) | |
| | 3-749-104-01 | CABLE, ANT (SLV-225EI) | |
| | 3-755-352-11 | MANUAL, INSTRUCTION (ENGLISH) (SLV-225EI/225UB) | |
| | 3-755-367-41 | MANUAL, INSTRUCTION (SLV-X27) | |
| * | 3-948-620-01 | CUSHION (FRONT), INNER | |
| * | 3-948-621-01 | CUSHION (BACK), INNER | |
| | 3-948-673-01 | DRIVER, PLASTIC (SLV-225UB/X27) | |
| * | 3-948-678-01 | INDIVIDUAL CARTON (SLV-X27) | |
| | 3-949-043-01 | DOOR, REMOTE CONTROL | |
| * | 3-949-158-01 | INDIVIDUAL CARTON (SLV-225EI/225UB) | |

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## HARDWARE LIST

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| #1 | 7-685-647-79 | SCREW +BTP 3X10 TYPE2 N-S | |
| #2 | 7-682-547-09 | SCREW +B 3X6 | |
| #3 | 7-685-534-19 | SCREW +BTP 2.6X8 TYPE2 N-S | |
| #4 | 7-685-661-19 | SCREW +BVTP 4X12 TYPE2 N-S | |
| #5 | 7-685-131-19 | SCREW +BTP 2.6X4 TYPE2 N-S | |
| #6 | 7-624-105-04 | STOP RING 2.3, TYPE -E | |
| #7 | 7-682-648-09 | SCREW (3X8), +PW | |
| #8 | 7-621-732-08 | SET-SCT, HEX. 2X3 FLAT POINT | |
| #9 | 7-621-775-20 | SCREW +B 2.6X5 | |
| #10 | 7-685-133-19 | SCREW, TOTSU PTP 2.6X6 TYPE2 | |
| #11 | 7-682-903-01 | SCREW (3X4), +PWH | |
| #12 | 7-621-759-45 | +PSW, 2.6X6 | |
| #13 | 7-688-001-01 | W 2, SMALL | |
| #14 | 7-685-134-19 | SCREW, TOTSU PTP 2.6X8 TYPE2 | |
| #15 | 7-685-650-79 | SCREW +BTP 3X16 TYPE2 N-S (225EI/225UB) | |
| #16 | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 SLIT | |

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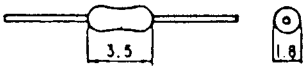
**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Description

| | 5% | ¼W | A |
|---|---|---|---|
| CARBON RESISTOR | 5% | ¼W | |



| Value | Part. No. | Value | Part. No. | Value | Part. No. | Value | Part. No. | Value | Part. No. | Value | Part. No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.22Ω | | 11Ω | 1-247-784-00 | 200Ω | 1-247-814-11 | 3.6kΩ | 1-247-844-11 | 62kΩ | 1-247-874-11 | 1.2MΩ | |
| 0.27Ω | | 12Ω | 1-249-394-11 | 220Ω | 1-249-409-11 | 3.9kΩ | 1-249-424-11 | 68kΩ | 1-249-439-11 | 1.5MΩ | |
| 0.33Ω | | 13Ω | 1-247-786-11 | 240Ω | 1-247-816-11 | 4.3kΩ | 1-247-846-11 | 75kΩ | 1-247-876-11 | 1.8MΩ | |
| 0.39Ω | | 15Ω | 1-249-395-11 | 270Ω | 1-249-410-11 | 4.7kΩ | 1-249-425-11 | 82kΩ | 1-249-440-11 | 2.0MΩ | |
| 0.47Ω | 1-249-377-11 | 16Ω | 1-247-788-00 | 300Ω | 1-247-818-11 | 5.1kΩ | 1-247-848-11 | 91kΩ | 1-247-878-00 | 2.2MΩ | 1-259-880-11 |
| 0.56Ω | 1-249-378-11 | 18Ω | 1-249-396-11 | 330Ω | 1-249-411-11 | 5.6kΩ | 1-249-426-11 | 100kΩ | 1-249-441-11 | 2.7MΩ | |
| 0.68Ω | 1-249-379-11 | 20Ω | 1-247-790-11 | 360Ω | 1-247-820-11 | 6.2kΩ | 1-247-850-11 | 110kΩ | 1-247-880-11 | 3.3MΩ | |
| 0.82Ω | 1-249-380-11 | 22Ω | 1-249-397-11 | 390Ω | 1-249-412-11 | 6.8kΩ | 1-249-427-11 | 120kΩ | 1-247-881-00 | 3.9MΩ | |
| 1.0Ω | 1-249-381-11 | 24Ω | 1-247-792-11 | 430Ω | 1-247-822-11 | 7.5kΩ | 1-247-852-11 | 130kΩ | 1-247-882-11 | 4.7MΩ | |
| 1.2Ω | 1-249-382-11 | 27Ω | 1-249-398-11 | 470Ω | 1-249-413-11 | 8.2kΩ | 1-249-428-11 | 150kΩ | 1-247-883-00 | 5.6MΩ | |
| 1.5Ω | 1-249-383-11 | 30Ω | 1-247-794-11 | 510Ω | 1-249-442-11 | 9.1kΩ | 1-247-854-11 | 160Ω | 1-247-884-11 | 6.8MΩ | |
| 1.6Ω | | 33Ω | 1-249-399-11 | 560Ω | 1-249-414-11 | 10kΩ | 1-249-429-11 | 180Ω | 1-247-885-00 | 8.2MΩ | |
| 1.8Ω | 1-249-384-11 | 36Ω | 1-247-796-11 | 620Ω | 1-247-826-00 | 11kΩ | 1-247-856-00 | 200kΩ | 1-247-886-11 | 10MΩ | |
| 2.2Ω | 1-249-385-11 | 39Ω | 1-249-400-11 | 680Ω | 1-249-415-11 | 12kΩ | 1-249-430-11 | 220kΩ | 1-247-887-00 | 12MΩ | |
| 2.4Ω | 1-247-768-00 | 43Ω | 1-247-798-11 | 750Ω | 1-247-828-11 | 13kΩ | 1-247-858-11 | 240kΩ | 1-247-888-11 | 15MΩ | |
| 2.7Ω | 1-249-386-11 | 47Ω | 1-249-401-11 | 820Ω | 1-249-416-11 | 15kΩ | 1-249-431-11 | 270kΩ | 1-247-889-00 | 18MΩ | |
| 3.0Ω | 1-247-770-00 | 51Ω | 1-247-800-11 | 910Ω | 1-247-830-11 | 16kΩ | 1-247-860-11 | 300kΩ | 1-247-890-11 | 22MΩ | |
| 3.3Ω | 1-249-387-11 | 56Ω | 1-249-402-11 | 1.0kΩ | 1-249-417-11 | 18kΩ | 1-249-432-11 | 330kΩ | 1-247-891-00 | | |
| 3.6Ω | 1-247-772-00 | 62Ω | 1-247-802-11 | 1.1kΩ | 1-247-832-11 | 20kΩ | 1-247-862-11 | 360kΩ | 1-247-892-11 | | |
| 3.9Ω | 1-249-388-11 | 68Ω | 1-249-403-11 | 1.2kΩ | 1-249-418-11 | 22kΩ | 1-249-433-11 | 390kΩ | 1-247-893-11 | | |
| 4.3Ω | 1-247-774-00 | 75Ω | 1-247-804-11 | 1.3kΩ | 1-247-834-11 | 24kΩ | 1-247-864-11 | 430kΩ | 1-247-894-11 | | |
| 4.7Ω | 1-249-389-11 | 82Ω | 1-249-404-00 | 1.5kΩ | 1-249-419-11 | 27kΩ | 1-249-434-11 | 470kΩ | 1-247-895-00 | | |
| 5.1Ω | 1-247-776-00 | 91Ω | 1-247-806-11 | 1.6kΩ | 1-247-836-11 | 30kΩ | 1-247-866-11 | 510kΩ | 1-247-896-11 | | |
| 5.6Ω | 1-249-390-11 | 100Ω | 1-249-405-11 | 1.8kΩ | 1-249-420-11 | 33kΩ | 1-249-435-11 | 560kΩ | 1-247-897-11 | | |
| 6.2Ω | 1-247-778-00 | 110Ω | 1-247-808-11 | 2.0kΩ | 1-247-838-00 | 36kΩ | 1-247-868-11 | 620kΩ | 1-247-898-11 | | |
| 6.8Ω | 1-249-391-11 | 120Ω | 1-249-406-11 | 2.2kΩ | 1-249-421-11 | 39kΩ | 1-249-436-11 | 680kΩ | 1-247-899-11 | | |
| 7.5Ω | 1-247-780-00 | 130Ω | 1-247-810-11 | 2.4kΩ | 1-247-840-00 | 43kΩ | 1-247-870-11 | 750kΩ | 1-247-900-11 | | |
| 8.2Ω | 1-249-392-11 | 150Ω | 1-249-407-11 | 2.7kΩ | 1-249-422-11 | 47kΩ | 1-249-437-11 | 820kΩ | 1-247-901-11 | | |
| 9.1Ω | 1-247-782-00 | 160Ω | 1-247-812-11 | 3.0kΩ | 1-247-842-11 | 51kΩ | 1-247-872-11 | 910kΩ | 1-247-902-11 | | |
| 10Ω | 1-249-393-11 | 180Ω | 1-249-408-11 | 3.3kΩ | 1-249-423-11 | 56kΩ | 1-249-438-11 | 1.0MΩ | 1-247-903-00 | | |

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